SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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Original Correspondence.

MINERAL WEALTH OF DAKOTA TERRITORY.

SIR,—About September, 1876, quartz was first discovered in the vicinity of Deadwood. In February, 1877, the first 10 stamp mill started crushing ore from the Alpha Mine; prior to this, however, there was a pulveriser crushing Hidden Treasure ore, and four arrastras crushing Father De Smit Mine ore. To-day the Alpha has a 20-stamp mill in operation, and three men in the mine can easily keep it choked full of ore all the time, ore that never yet run as low as $25 per ton, but has run as high as $40. The Hidden Treasure has the old pulveriser and a new 20-stamp mill in operation—in fact, there is already five mills working constantly in Central City, numbering 95 stamps altogether; 7 more in course of construction will have about the same number of stamp heads. One 10-stamp mill on Bob Tail Creek running on Golden Terry ore; two 20-stamp mills on Black Tail Creek will be ready in a few days to crush ore; both creeks mentioned are tributaries of Deadwood Creek. Two 10-stamp mills in operation at Leeds City; four more in course of construction having 45 heads; a 2-stamp mill at Pennington City; a grinder of equal capacity to a 10-stamp mill in Garden City; and a 2-stamp mill at Deadwood.

Such is the improvement in the way of mills during the past six months; still they come. There is probably 12 mills on the road to this place now from different points of the railroad. There is plenty of quartz here that will pay for milling, but all the mills running at present are run on ore taken from the surface of the veins, ore that will mill from $12 to $40 per ton, the ore being so easily milled and mined that $12 per ton will pay big profits, as the cost of taking out the ore, hauling, and milling in no case exceeds $5 per ton. Still I am in doubt as to whether all the mills are taking out money enough to pay expenses on the rock, and leave remunerative dividends for those interested. For this reason, that the men running the mills are not experienced, and waste more gold in the tailings than would pay to hire experienced labour. For instance, the Hidden Treasure rock crushed by the old pulveriser averages $30 per ton; the tailings from the same will assay $24 per ton, but it is probable they may work it closer in their new 20-stamp mill.

The Pearson mill (25 stamps) had a contract to crush ore from the Fairview Mine at $10 per ton; the tailings assay $7 per ton, and the cost of taking out the ore and hauling is $2 per ton, taking $19 rock to pay expenses when crushed by a custom mill; this is all the results of inexperience. The rock can easily be worked to 90 or even 95 per cent. of assay value, which, allowing the cost of milling, hauling, and mining to be $5 per ton, would leave handsome profits on $20 ore, especially if there was a 50 or 100-stamp mill running on the ore. Mills of that number of heads could easily be kept running as the ledges are wide, the ore easily taken out, and will in all probability be equally as rich as they sink on them, perhaps richer.

The mills are not the substantial ones we see erected in California and Nevada, the more western States, but are mostly light, flimsy concerns that may do well enough for prospecting mills. It is my opinion that several of the mills now working and in course of construction will be turned over to more experienced men than are at present working them. The mines as yet are not really what we may term developed, being worked from the surface, and not requiring much skill to pick and shovel the rock out. Still experienced men could work some of the mines that are now taking out ore to a much greater advantage than they are at present worked, especially so with the Hidden Treasure, which at present is worked on the same principle as a few prospectors would work a mine calculating to quit it the next day.

There are several good mines that are not yet milling any ore, but in all probability will be dividend-paying in less than three months. Several mines will be in lawsuit the next session of Court—in fact, there will be considerable litigation with mining companies, still I do not think as much as we might expect where there is such a number of mines. I might say that quartz and quartz mines are looking well, but the excitement is over. Everything will be kept going now on its real merits. There are great advantages here at present for mining speculators and experienced mining men to take the place of those newspaper men, lawyers, and farmers who may do well enough at their own professions, but to make themselves successful at operating mines they ought to have begun years ago. Reports from the Big Horn Mountains are causing great excitement here at present, and in all probability within the next 12 months there will be another field for speculators in and around this range of mountains.

THOMAS H. WHITE,
United States Deputy Mineral Surveyor.

Deadwood City, Lawrance County, Dakota Territory, June 27.

MINING IN THE EAST—No. XVII.

CONTACT DEPOSITS OF THE BANAT.

MUTUAL REACTIONS OF THE BANATITE AND THE DISTURBED BEDS.

SIR,—As before observed the intrusions of the banatite or syenite have taken place posterior to the upheaval of granite having penetrated its superficially consolidated crust, and disrupted the Jura and chalk, the sequence of whose limestones, marls, and sandstones must have a thickness of at least 2000 ft. At numerous points it has protruded less or more completely through these strata, and, consequently, has been consolidated under very dissimilar conditions, especially in regard to the manner and rate of cooling, and the rocks in direct contact. The reciprocal destruction which the mica schists, syenite, and sedimentary beds suffered along the lines of contact, and the transformations effected by their mutual reactions during consolidation, determined the formation of immense masses of such a singular and changeable character that it is scarcely possible to class them.

These rocks form a selvage of uncertain dimensions around the knolls and mountains of crystalline limestone. They have been termed gangues by the miners, because it is only in connection with them that the ores of the useful metals have been found. These gangues sometimes develope themselves to such an extent as to pass into compact or crystalline garnet rock, and in some places—particularly at Csiklowa—the whole mass of the disreputed limestone has been transformed into compact grossular rock, around which no deposits exist, the total disappearance of the lime-rock having been unfavourable to the segregation of mineral.

During the slow formations of these contact masses the contiguous rocks became highly metamorphosed; the limestone was changed to hard crystalline rock, or to white granular beds of a texture well fitted for sculpture; these schists near the bosses of eruptive rock were transformed into various hornblendic rocks, which are sometimes found in considerable hills around them, and the marls were hardened into hornstones. The contact between mica schist and syenite is often gradual (notably so at Maidanpek), and it then becomes impossible to define the separation. The garnet rock near the syenite is often a confused mass of fragmentary dodecahedral crystals, tinted with shades of green and brown, in which are interspersed numerous large and often perfect crystals of wollastonite, malacolite, and vesuvian. Removed from the syenite this crystalline mass passes into compact grossular rock, of a light-brown or grey colour.

At the northern end of the Banat mining districts, where the upheaving force would seem to have been most active, the contact rocks and gangues are of immense width; but going southwards they are not so persistent, and the contact between the banatite and the disturbed rocks is often immediate. Still further southwards, at Cuchaina, no gangues have been found, probably owing to the fact that the lime-tone has been upheaved, but not encompassed by eruptive rocks. The gangues are, as might have been expected, as variable in their appearance, texture, and composition as are the rocks whose reactions have produced them, and the ores which they enclose reflect this variability.

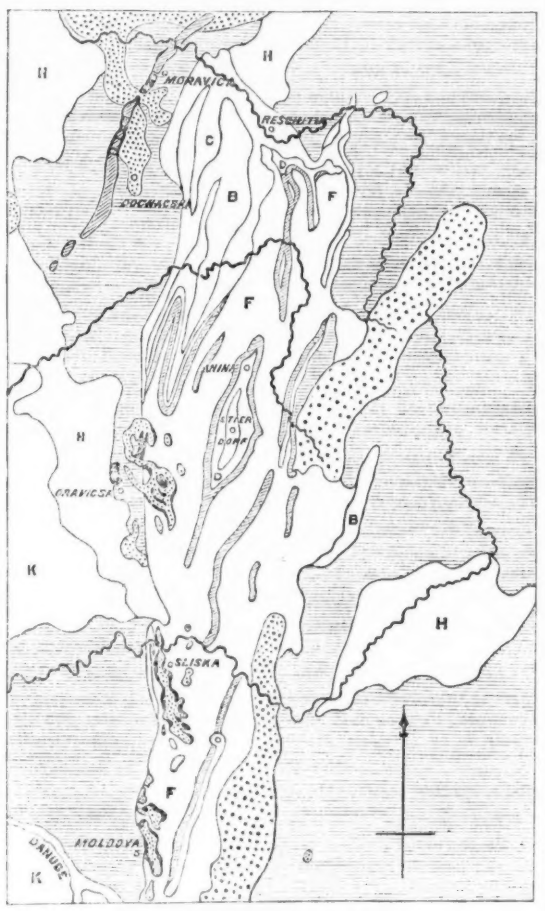
The above considerations make it evident that the constitution of the gangues is entirely dependent on that of the rocks between which they lie—thus, when syenite and limestone are the enveloping rocks the gangue is made up of varieties of garnet rock and felsit, through which their fragments are scattered; when, however, mica schist replaces the limestone the prevalence of tremolite and actinolite demonstrates the effect of change of strata. At the mica schists junctions most beautiful and large specimens of fibrous and radiated tremolite may be collected.

During the gradual cessation of active volcanic disturbances secondary minerals—quartz, steatite, epidote, &c.—crystallised in the numerous crevices and hollows occasioned by the consolidation of the gangues, together with the sulphides of the metals. When finally denudation brought these deposits within the influence of surface action decomposition set in, and developed the numerous and enormous masses of oxidised iron ores, which have been so continuously exploited during the last century and a half.

The observer is most strikingly impressed by the remarkable analogy which he finds existing between the whole of the Banat contact formations, considering the number of eruptive bosses around which they mantle and the great extent of country over which they are spread. He discovers that wherever the syenitic rock has intruded itself into similar sedimentary strata analogous contact masses have been elaborated, as well as ores of the same metals, and that even subsequent reactions have given rise to identical products.

The manner in which the contact rocks with their metalliferous contents mantle around the limestone and their absolute dependence on the syenite may be recognised by consulting the following geological plan, which has been carefully reduced, by the courteous permission of the States Railway Company, from their large general plan of the Banater domain. In this sketch the syenite is represented by thickly and the granite by thinly dotted lines, whilst the contact rocks are rendered conspicuous by being coloured black. The basin in which lie the sedimentary strata is clearly defined by the horizontal lines representing crystalline schists. The plan has been drawn at a scale of eight English miles to the inch.

BANAT MINING DISTRICT.



B.—Carboniferous, with Thick coal.
C.—Dyas; Red Sandstone.
D.—Lias coal measures.
E.—Jura limestone (diagonal lines).
F.—Cretaceous.
H.—Neogen, with Thick brown coal.
K.—Diluvium and alluvium.

MINERALS ENCLOSED IN THE GANGUES.—The metallic minerals enclosed in the gangues are very numerous, and some of them—*e.g.*, ores of iron—in enormous quantities. Many rare minerals have been found, some of which—Ludwigite, Klinochlar—have been distinguished and described from specimens obtained from the Banat mines.

The peculiar feature in all the mining districts is the complete absence of veins and the entire dependence of the deposits on the lines of fracture developed by the disturbances which accompanied consolidation. Numerous deceptive indications of ores exist outside the true deposits in the mica schists, and even in the mass of syenite itself, but the extensive explorations made have failed to discover one deposit of value. It seems clear that the primary disruption and subsequent reactions which produced the contact masses did not permit the accumulation of metallic matter; but that it is only in the extensive vein-like fractures along the junctions of the garnetiferous gangues with the limestone, or with the syenite and schists, that the ores have found conditions favourable to their deposition. These fractures have played to a small extent the *role* of faults, and in some of the mines the veins possess a brecciated structure, which bears witness to the changes which the relative position of the walls have suffered. As far as appearances go many of the deposits, whether of iron, lead, copper, or zinc, resemble courses of ore in lodes—the important difference being that when the ore gives out no vein continues, but the enveloping gangue is met on every side.

The columns, lentiles, and nests of the ores deposited along the junctions seem very independent of each other—are sometimes thickly grouped, at others sparsely scattered—but they invariably follow both in strike and dip the junction rocks. It must be evident that these deposits, owing their existence to the contact of the limestone with the syenite, cannot exceed the former in depth, and the few mines which have unbottomed the lime rock prove this rule. The depth of the masses of limestone resting on the syenite is various, but can rarely exceed 100 fms., and as no ores have been found under the limestone itself the extension of the courses of ore must be considerably less.

The absence of metallic minerals in the eruptive rock, and even in the gangues near and at the inferior parts of the wedge-like masses of limestone, together with the ever-increasing richness of the deposits as the surface is approached, would favour the supposition that on the fracture of the gangues vaporised minerals penetrated everywhere, and filled out the hollows and druses with sulphides of the various metals. This idea is also supported by the fact of the richest deposits occupying the most elevated portions of the bosses of banatite.

The ores principally found are those of iron, copper, lead, zinc, silver, and gold; in small quantities those of arsenic, manganese, and antimony—whilst traces of bismuth, cobalt, nickel, and molybdenum are frequent. These ores exist in every district, though some of them affect certain localities—thus, Moravicsa produces magnetite and hematite of excellent quality, Dognacska argentiferous copper and lead, Oravicsa rich ores of copper and gold, whilst the deposits of Szaszka and Moldova contain inexhaustible quantities of cupreous pyrites. From Dognacska, southwards to the Danube, there is a gradual declension in the value of the deposits; the ores of iron so valuable at Moravicsa become worthless at Moldova, where also the copper, or rather sulphur, ores seldom contained 3 per cent. of the former metal.

Though undoubtedly nearly the whole of the ores were deposited as sulphides exposure to the atmosphere has oxidised them to a certain depth, so that the junction may be likened to an enormous iron lode. In depth the ores resume their normal character, and continue as sulphides until they gradually die out in the gangue as the inferior limit of the limestone is approached. Generally the oxidation of the iron sulphides has released the copper and zinc which have been precipitated as oxides, sulphates, and carbonates in the hollows and interstices of the lime rock below; small quantities of lead ores have been also oxidised and similarly deposited.

The decompositions attending the formations of the secondary products have everywhere affected the associated rocks, and have mineralised and softened them, so that they have acquired that peculiar appearance which the miner has accustomed himself to call "keenly." The rocks resting immediately on the syenite, and the upper portion of the syenite itself, are near the deposits much impregnated with finely dispersed crystals of pyrites.

Oravitza, July 1. EMPRESSARIO.

COAL MINING—NEW SOUTH WALES.

SIR,—The different foreign and colonial steam lines, which all of necessity concentrate at Sydney and Newcastle for their coal—and also the foreign demand both for steam and gas purposes—is creating a great drain on the mines at present opened, most of which are of comparatively small area, and some nearly worked out, so that very shortly fresh ground must be opened out round Lake Macquarie, outside the boundaries of the present workings, and adjacent to the Wallsend Company's property, which is now the best and largest one at work in the colony, and pays the largest dividends. No doubt several new areas will be offered for sale in England, and I send you this short letter to point out that whilst we have an enormous extent of coal-bearing country, yet there are but three seams which always command the market, both at home and abroad. The first is the A A Company's seam, the whole area of which belongs to the company, and is nearest to Newcastle. The second is the Wallsend, which begins a few miles out of Newcastle and, as far as yet proved, runs only in a broad belt of four or five miles at the back of Lake Macquarie, and for probably eight or ten miles, so that its outside boundary is within 15 miles from Newcastle; and, thirdly, the Bulli seam, which is 100 miles from Newcastle, to the south of Sydney, and is purely a steam coal, whilst the A A and Wallsend seams are both steam, gas, and household coals, as well also coke, which many of the other Newcastle seams will not do, although otherwise good gas or household coal.

Of course I need hardly point out that the coal which best combines all these qualities is the coal which will secure a sale, and that whoever secures the Wallsend seam blocks virtually defies future competition, whether in the colonial or foreign markets, and, therefore, let any of your readers who may be tempted to invest in New South Wales coal enquire closely as to its whereabouts and character, and only venture in other seams where it can be shown that from some one special quality it always commands some special line of trade.

These remarks do not apply to coal inland from Sydney on the railway line, because that seam is "Hobson's choice," for all the inland towns, copper smelting works, and manufacturers, which the certain supply is now inducing to use it instead of wood, which already begins to grow scarce, and no doubt that within a few years the proprietors of the best blocks will do equally as well as the Newcastle ones are doing, for the colony is rapidly increasing in wealth and population, and along our hundred of miles of inland railway manufactures will naturally spring up as inducement offers.

Sydney, May 30. R. D. ADAMS.

P.S.—Our gold fields have taken a jump lately—several rich finds in Hawkin's Hill and other places, where working miners have taken up claims abandoned by "companies" in the panic, just at the point where they ought to have kept on. This has given shareholders heart again, and with deep sinking we shall see a new era of success.

MANGANESE MINES IN ITALY.

SIR,—It may be interesting to the mineral world, and especially to consumers of manganese, that some exceedingly valuable mines have been recently opened in the Val d'Aosta, situated on the sunny side of the Alps. One mine alone, that of St. Marcel, in the lovely Val d'Aosta, is considered capable of producing 50,000 tons a year, and that of Val Tournanche is a clear competitor in the question of richness and capability.

The St. Marcel Mine is a Royal concession, and is said to be known to all mineralogical and geological savants, and even some later works on mineralogy refer to the remarkable deposit there. It is one of the most important mines of manganese, where there is a considerable length on the lode; indeed, it can be said to be a champion lode, formed by the union of several other lodes, which are themselves of much value. It should be worked by many headings, and is so situated that an immense amount of work can be going on simultaneously; and over 50,000 tons a year are thought by experts to be procurable. It is workable all the year round, and workmen are now employed there; and the produce is sold at a constant price of 4*l.* a ton, delivered on to the railway wagons at Ivrea station.

As a direct railway is likely to be commenced next year from Aosta to Ivrea, the mine will then enjoy exceptional advantages, as the line will touch the foot of the mountain where the ore is mined. The cost of mining is 15 fr. the ton, to which must be added 5 fr. for royalty; 30 fr. for cost of transport from the mines to the highway; 15 fr. for carrying from the highway to Ivrea Railway Station; leaving 35 frs. (1*l.* 8s.) for profit: 100 frs. or 4*l.* Could an English company work these mines it is known that a great saving in the cost of the mining could be made, as the present proprietors are too poor to work the affair properly, and have no idea of proper management of a large concern. To this must be added the immense advantage of early railway communication. This mine is a very important one, considering how abundant and rich is the ore, which is composed of sulphuret of manganese, oxide (both red and violet) of manganese, crystal manganese, manganesite, &c. The whole contains a percentage of silver. The mine is well situated at the end of three hours of a mountain road. There is an abundance of utilisable water-power close by. Specimens of the ore are now to be seen in England.

The Tourgnon Mine includes several lodes of manganese, and is one hour and a half from the royal road, and in the neighbourhood of Chatillon, in the Val d'Aosta; it will be much benefited by the construction of the Aosta-Ivrea Railway. A heading into the mountain communicates with the two galleries driven on the course of the lode, which is described as becoming richer and richer as the works advance. It is considered that when this is opened out a large amount of ore can be sent away, but as yet not much has been done. The mine is four hours from the Ivrea Railway Station, and can be worked nearly all the year round. The cost of extraction and transport is 65 frs., but can be much diminished by better administration and railway facilities.

The Val Tournanche Mine is situated in the valley from which it takes its name, and above the district of Chatillon, in the Val d'Aosta, and is six hours from the royal road. This may be called a virgin mine, as nothing beyond exploration has been done. It is an immense manganiferous deposit, and it is considered to be equal in importance to that of St. Marcel, there being many lodes which even on the surface are more than a metre in width. The richness of the ore (sample No. 3) proves how much one can justly hope for in the interior of the mass. At present it could be worked nine months in the year, but if a barrack were built there would be no need to suspend operations in winter. At present the cost of cart-

ing from the mine to Ivrea is 65 frs.; but with a railway and a piece of tramway this item would be very much reduced, and 35 frs. per ton profit would be nearer the mark than the 15 frs. on carted ore. This mine, after a year's serious development, would become a very large affair, as even now it produces mineral. There are also two other mines, consisting of groups of good lodes, producing sulphuret and peroxide of manganese; one mine being in the vicinity of the royal road (1½ hour), and 3 hours from Ivrea, and the other only ¾ hour from the royal road, 5 hours from Ivrea. These two latter are lodes only, and not the manganiferous masses of the three first-mentioned mines.

Bardonnechia Mine is situated three-quarters of a mile from the railway station of that name. It is a mass of manganese, and has several lodes, running mostly in a horizontal direction, mostly about 1 metre wide. The situation is good, and the mine can be worked all the year round. The ore is a peroxide of manganese, with oxide of iron, and becomes richer in sulphuret of manganese as depth is gained. As only trial pits have been made, the mine is yet unworked. With a vertical shaft 100 metres in depth many lodes and workings could be attacked, and the production would then be very considerable. All that is wanted is capital, management, and a little mining knowledge.

The proprietors are persuaded that could a society with some means take up these mines they would undertake a very important operation, and secure the monopoly, so to speak, of manganese ores of that rich quality so searched for by metallurgical industries, and for the manufacture of Italian glass and bleaching purposes. About 500 tons of rich red oxide of manganese, violet manganese, and manganesite were found which had been abandoned by the Romans, who knew not the value of the mineral; this could easily be picked and cleaned, and sent to market.

Leeds, July 19. Translated by R. E. WILSON, Assoc. M.C.E.

THE ROYAL AGRICULTURAL SHOW AT LIVERPOOL.

SIR,—"Nothing succeeds like success." This important show has been a monetary, and in many other respects a most gratifying, success. The visitors who passed through the pay-gates numbered 137,976, against 163,145 at Birmingham last year. The season-ticket holders numbered over 2000 this year, against 1300 last year. The total receipts will exceed those of 1876 by more than 1000*l.*, owing in no small degree to fine weather on Thursday and Friday, and an affectation of "gentility" by the payment of the "respectable" half-crown in contrast with the "vulgar" conventional shilling payment put down for Saturday and Monday. The rain on Saturday afternoon deterred some thousands from venturing to the show. The visitors numbered 51,313 notwithstanding. Judging by their "counting-houses" (as everybody said) the operative agriculturists were numerically great, and the national persistency in pursuit could hardly be seen to more advantage than in Hodge's quiet resoluteness in flitting through the down-pouring rain from stand to stand, as if rain and sunshine were "both alike" to him. Guiltless of umbrella or overcoat, but believing strongly in final perseverance, he had paid his shilling at a turnstile, and he evidently did not intend to "go whoam with on'y sixpennorth o' th' show."

Some folk could and would draw a moral from this. More than once the sons of the soil were heard in rough witticism to say—"'Tis rather wet, but I'm uncommon dry," and Mrs. Barlow's fluid refreshment stand came in naturally enough for a goodly share of patronage. There were mysterious allusions to her relative "Mr. Billy Barlow," but the wit of it was lost upon the Liverpudlians who happened to be dry at the same time. Whether in sympathy with this crowd or not I did not know, but although not a beer-drinker I experienced a "dry sensation" creeping over me which I felt no inclination to control, and so hearing sombody say that "All-slops bitter" was to be had close by, I ventured on a 3d. glass, and found it such execrable stuff that I left it behind in disgust. Smothered indignation took the place of thirst, and I resolved in the interest of humanity to urge upon the respectable brewers of Allsop and Bass to take precautions another year that their best brew may be exhibited in retail to the thirsty sightseers, instead of the beastly mess which people (under their world-wide names) have been at this show inveigled into swallowing, whilst shutting out as much as possible all sense of taste. I hope this last observation will be noticed in the House of Commons and at Burton.

Saint Swithin wept more than usual on Sunday. It rained "heaven's hardest." On Monday, although it kept pretty well dry overhead, the deposit of "slosh" at the show was something to be remembered. Although not in the programme, there was a most interesting display of ladies' ancles. As to "picking one's way," there was no use in that. The only precaution that could be taken was to turn toes in and heels out as much as possible, and tread lightly in the "slosh," "slush," and "sludge," with elbows outstretched like the shoulders of a certain breed of Telemarken kine. Movements, some of them, were like uncouth skating under difficulties. Such a mess! Of course ancles engrossed good-humoured observations, and, occasionally too, certain "calves," not intended to be exhibited by their owners. Mullingar heifers, beef to the heels, had exemplars here, but "fineness of bone" was by no means a scarcity, and got admired accordingly by connoisseurs of the agricultural persuasion.

The mechanical operative element evidently prevailed on Monday, and both the lads and their lasses displayed the most creditable and plucky perseverance. "The crown days," Wednesday and Thursday, were embellished with the "Lancashire witches," many of them looking exceedingly pretty and captivating. Some of them were most becomingly dressed; others appeared very uncomfortable, and I am sorry to have to add that nearly all of them were "tight."* To the everlasting credit of the visitors at this show, the allegation of tightness only applied to the fair sex, and the police, metropolitan and otherwise, had not to interfere in a single solitary instance.

Topographically, Liverpool is not a central place for an exhibition of this sort. Take a pair of compasses, put one leg upon the spot of a map of the United Kingdom marked Liverpool, and extend the other to the spot indicating Birmingham, inscribe a circle with that radius, and you will include a very large unpopulated area. Do the same with Birmingham as a centre, and a strong reason is at once apparent why visitors to the show at that centre should outnumber those at Liverpool. The receipts at Manchester in 1869 amounted to 17,059*l.* But there, as good a population-centre as Birmingham, the Prince of Wales was present on one of the days, who is always worth a good deal as an exhibit, and there was a still greater attraction "for the million"—that of horse-leaping, an exhibition irresistible to thousands upon thousands of our islanders, whose love of horses and their capabilities is deeper rooted, perhaps, that any other of their national propensities and peculiarities. On the present occasion had there been a chance of somebody breaking his neck through a luckless leap the funds no doubt would have been considerably augmented. Aintree races, simultaneously held, drew off a good many of the delighters in horse-flesh, and where might be seen, as usual, equestrian daring carried excitingly on, with betting accompaniments. Touching horses, the show held an immense assortment, the fancy and actual value of which was enormous. Literal "mountains of flesh" in some instances, and "heavenly ponies" in others, delighted everybody. One handsome stately fellow of the cart-horse series, requiring a ladder and extra length of leg to get astride him, got the first prize of his class, and he seemed to know all about it. He looked as if he expected it; he had done it before, and he meant to do it again. He was every inch a superior animal, and he commanded as a right the admiration of all on-lookers; he got it too, and no mistake, and he walked away from the grand-stand as if fully conscious of his superiority and the laudation of his admirers. Some of these equine nobles had big babies in the show, whose gigantic mothers looked as proud of their progeny as some human mothers do. For myself, I do not know a "hack" from a "hunter," but the Emperor of the Brazils was delighted with the excellence of the horses, as well he might be.

The horse exhibition, however, was greatly enhanced by the parade on Saturday afternoon of about 350 of the Liverpool working cart-horses in their gearing, each horse led by an attendant. The worth of these fine animals is put at an average of 100*l.* each by a judge in such matters. Manchester is great at this sort of display every May-day, but I do not think Manchester ever came up to this exhibition. Jupiter very good naturedly forbore squeezing the clouds until this parade was over, and the horses on their way home. Some of these cart-horses are probably matchless, and the crowd of witnesses unanimously awarded their vote of applause, and the committee 150*l.* for distribution amongst their care-takers and attendants.

The lovers of fine cattle had a big field to luxuriate in. In this department of the show were exhibited, to make use of bovine expressions—solid blocks of meat, square-hipped uns, straight-backed uns, round-shouldered uns, small-headed uns, clean-skinned uns, long horns, short horns, Herefords, Devons, Alderneys, Jerseys, Guernseys, Norfolks, Suffolks, Ayrshires, Galloways, Welsh, &c. One of the bulls is estimated to weigh a ton and a quarter, and it certainly seemed impossible that more meat could be got upon so little bone. The cows were "as fine as cows can be." The sheep, wonders of mutton; fat, flesh, and wool. Some curly white sheep were positively beautiful to look at. The pigs, of more than aldermanic fatness, were alarming instances of over feeding, stupidity, and uncomfortableness. Their sense of sight was puffed out of use by accumulated fat, their snout tips were barely visible on the same account, and their legs utterly useless for locomotion; not by any means the most agreeable of things to look at, and yet the admirers were not few of these abnormal conditions. I asked an observer "Who eats such pigs as these?" He said "I don't know; I don't." Asked to give my opinion of the pigs I could only say "They are big and fat," and walk away half sick of the sight, and humming the old song "Little pigs make the best o' pork," show pigs to the contrary notwithstanding. It seemed prostration of talent for a boy to be feeding one of these greasy monsters out of a sort of baby bottle.

Many people expressed an opinion that dogs and fowls would have added greatly to the attractions of the show; not that the show was wanting in attractions. Nobody of at all an enquiring turn of mind could visit it without experiencing great pleasure and profit. To notice everything in the time allotted would be simply impossible. To notice the chief exhibits would take up more than all the time at command. To give anything like a satisfactory description of a hundredth part of them in the columns of a newspaper would be impracticable. I will, therefore, touch only upon a few of them.

I alluded last week to "Decauville's patent iron carrier," adapted for mining and other purposes. This invention appears to me so important that I advise others to obtain full particulars from the agents—Messrs. Shaw Brothers, Cambridge-street, Birmingham.

In this country wall fruit comes to grief very often, notwithstanding all the ordinary pains taken to prevent it. This is a sad tax upon reasonable luxury. Most people like ripe fruit, and to gather it themselves—when they can. This they might always do, I think, if they used the "sliding wall-fruit shield," designed for the protection of trees from frosts during the critical period of blossoming and fruit-setting. The lights run on continuous rods, permanently fixed to the wall, and easily slide along. Cranston and Luck, of Birmingham, are the sole manufacturers of this very useful, simple, and cheap contrivance.

Norton's Abyssinian patent tube-well, to facilitate the testing for and obtaining water quicker, cheaper, and purer than by the tedious processes hitherto employed, deserves universal attention, particularly as a well-tube and pump, including fixing 15 to 20 ft., costs only 7*l.* 5*s.* (Mr. G. F. Cox, of Corporation-street, Manchester, furnishes full particulars).

Messrs. Louis Simon and Son, of Nottingham, introduce an improved gas-engine, which appears a most—if not the most—convenient and economical small motor for driving printing and other machinery, &c. These almost noiseless little engines require no boiler, no fire, no electricity, no coals, no water, and they have neither smell nor inconvenient heat. They occupy very little space. Common coal gas is burned, which, at 4*s.* per 1000 ft., brings out a cost of only 1*d.* per horse-power per hour. In localities where there are no gasworks these exhibitors supply also what they call the "Alpha gas-making machine," for making gas for their engines on the spot. In operation both these inventions seem to fulfil all that is required of them.

Baker's rotary pressure blower when at work astonished some of the passers-by, myself amongst the number. A patent and effectual mode of "raising the wind." I have heard there are people about whose tempers have been soured and their peace of mind imperilled through a "smokey house and a scolding wife." I would on no account interfere with the liberty of a wife to scold as much as she likes, but as to smoke prevention and domestic ventilation generally, I think James Howorth's patent revolving Archimedean screw ventilator, where used, must get rid of smoke of one sort from a dwelling; and, perhaps, Baker's blower, turned sharply in the direction of the other, might be equally effective.

Hancock's patent butter machine is a very useful invention. The exhibitor starts with the text—"The importance of butter coming to table without being touched by the hand is one of the mechanical requirements of the day." This is obvious, whoever says it. This machine has for its objects the washing butter from all traces of milk and acid, cooling and making it firm in hot weather without touching it, the removal of turnip and other objectionable flavours, and the conversion of salt butter into fresh butter for daily use by the action of cold water only. The exhibitor did what he said of the apparatus, and assured his audience that the queer-smelling salt butter he operated on was increased in value by 4*d.*, at the least, per pound avoirdupois. Nobody seemed to doubt it. Some present, however, fond of bread and butter, asked whether the "buttereine" and "bosh" (of some Liverpool buttermen) could be advantageously treated in the same way. Some of us hoped it could not.

Rollins and Co.'s patent double-jaw vices are formidable looking instruments, constructed to give an awfully firm grip of an object at any desired angle. Foster's (of Nottingham) patent cashier, check till, and apparatus, appears a very important invention for checking shop cash-takings. By the use of it cash balances are found correct every evening at less than a quarter of the trouble involved in the old systems. Six guineas will purchase this bar to dishonesty and ensure accuracy. Wild's patent swift-washer is said to save time, trouble, temper, and expense, and all for 35*s.* Amongst the beneficial revolutions with which we are threatened, traction-engines will certainly hold a prominent place. Many of them were at the show. To the uninitiated they appeared pretty much alike, but Ruston, Proctor, and Co.'s moved about with ease and something like grace. Siddeley and Co.'s ice-making apparatus is important, touching a large importation of foreign beef and mutton. A cold chamber made of ordinary boards, into which I went for a few minutes, led me to the conclusion that the plan would be adopted to ordinary steamers. In this chamber circulating pipes are conducted from the refrigerating machine. All moisture is condensed upon these pipes in the condition of ice, and thus produces a dry temperature varying between 40° and 42° Fahr.

The roots and seeds exhibited, some of them were truly wonderful products. Mangolds, turnips, and cabbages were enormous. Sutton and Sons of course were famous as usual; for one kind of swede they have received 400*l.* in prizes.

Artificial manure manufactures were well represented. The science of plant food is assuming almost creative pretentions. Farmyard muck seems to be nowhere. Farmers years ago used to grow heavy crops without phospho-guana, or other miraculous fertilisers. It is very well known that excess of stimulants applied to either animal or vegetable life take the strength out. Forced crops are not always improvements. Grass may be abundant and tasteless. Roots, though large, may be washy and unpalatable to live stock. Corn, &c., may run to straw to the great detriment of seed produce. The land-produce doctors wax eloquent in praise of their respective stimulants, and are prepared (apparently) to adjust proportions of phosphoric acid and ammonia, and at once to suit the noses and the pockets of would-be purchasers. There is, however, a good deal of affectation about it. Science is exercised in the preparation of the fertilisers, but albeit specific instructions given away with the products, the users of them are, for the most part, haphazard in their distribution on lands supposed to require absolutely their specific aid. Certificates of excellence have this last week been sown broadcast at the show, and large orders taken by the exhibitors of "bag manures." Speaking by the testimonial-sheets, the foodstuffs for horses and cattle exhibited were of accredited excellence. The great fluted slabs of oilcake, however, emitted a smell so like the fat of some prize-fed beef and mutton that I have tasted occasionally that I turned away in temporary nausea in search of something more agreeable. In conclusion, I would say that to all appearance everybody was gratified, more or less, with the exhibition, and of the opinion that it was a National Annual most worthy of national support.—*Liverpool, July* 18. R.

* Of course I do not mean "tight" in a licensed victualler's sense, but only as regards the present symmetrical mode of eel-skin dressing.

TIN DRESSING.

SIR,—The tinners—I mean the managers of tin works—are very slow in adopting any improvement in the mode of tin dressing, except when they can claim it as their own. It is well known that through the imperfections of the methods in use at Dolcoath and the other mines whose waters flow down the "Red River," that a large quantity of tin—fine tin—is carried down towards and into the Bristol Channel. So much as 40 tons per month were sometimes caught in its progress thither by the numerous companies who have established dressing appliances nearly all the way down between Tuckingmill and the sea. This fact elicited some time ago a lengthy correspondence in your Journal, and some persons have even charged the mine agents with a guilty complicity with the owners of the works on the river, because they had interest in them, and, therefore, derived advantage from the tin which they permitted to go down the stream. For this I may confidently aver there is not the slightest foundation in fact. The agents are too honourable to be guilty of such tricks. I think, however, that they are not sufficiently open to receive information leading to a diminution of the escaping tin. If it be true that Mr. R. H. Williams's buddles in use at Wheal Eliza, &c., secure an almost perfect separation of the tin from the gangue, it should not be beneath the dignity of mine agents to take copies of them—which I believe he is willing they should do—and construct them at their works. I can testify from observation that the separation is very nearly perfect. No man can make a living out of that which escapes. One man tried it, and became a bankrupt in the experiment, whereas on the Red River several dressers have made a good deal of money. This fact shows that Mr. Williams's buddles must be superior to those in use at the Camborne and Illogan Mines. I have been informed that Mr. Williams is about to take a patent for his buddle, in which some slight alteration is to be made. Another advantage in connection with Mr. Williams's buddle is their cheapness. TOURIST.

July 17.

MINING INSTITUTE OF CORNWALL.

SIR,—It appears to be the intention of the members of the Cornish Mining Institute to take annual excursions, like most other societies, and this year their visit was to Devon Great Consols on Monday, the 16th instant. The day was unfortunate, there being rain all the day, which must have made their journey other than very agreeable. I could not conveniently attend myself, nor was I very anxious to do so, having in my numerous tours seen that celebrated mine many times. I dare say that one of the party will supply you with all particulars of their inspection of the numerous operations at surface.—*July* 17. TOURIST.

MINING DEBTS.

SIR,—The recent discovery of the large debt due to the bank by the West Basset Mining Company will, I trust, be the means of preventing a continuance of the practice of other mines of overdrawing on the banks without the consent of the companies. The overdraft at Dolcoath is more excusable than that at West Basset, because there are effects there to meet the amount, although I think it wrong to declare dividends while there is a balance due to bankers in any case.

Now that the debt at West Basset has transpired, and also that at Dolcoath, the public will be curious to discover how other mines stand with their bankers—for instance, Tincroft and Carn Brea. It has been intimated that the balance against each of these companies is considerable. It would be well for a shareholder in each mine to demand the production of the banker's pass-book, as Mr. Heard did at West Basset. Such a demand might offend the manager, but it ought to be made that investors might know the real state of affairs, and a balance-sheet, showing assets and liabilities, should be produced at all meetings. If Tincroft and Carn Brea Mines are in debt so largely as some people suppose, the discovery will probably surprise some of the distant shareholders, and be the means, possibly, of affecting the price of shares, but it may be that the supposition is not well founded. We must wait for the next meeting to discover the facts.—*Redruth, July* 16. LISTENER.

THE TRUCK SYSTEM.

SIR,—You are fully informed of the complaints which the poor labouring classes have justly expressed from their experience of the evils of what is called the "Truck System." I never knew a place where that system was more extensively acted on than in the village of St. Day, in Cornwall, by Messrs. Collan and James Harvey, grocers, drapers, ironmongers, coopers, timber merchants, stationers, flour dealers, &c. They supplied almost every article in use in mines and habitations, and that at such prices, and for such a long series of years, as to make them very rich men. Mr. Collan Harvey, who left St. Day about 30 years ago, died at Pengreep about 20 years ago, leaving all his property—estimated at 1,000,000*l.* sterling—to his only surviving child, Mr. Richard Harvey, who purchased extensive lands in Devonshire, and resided thereon. He died there (at Greenway) about five years ago, leaving no issue, his only child (a son) having died in infancy, after being sent away to avoid an endemic disease prevailing in Gwennap, of which disease he, nevertheless, died in or near London. Mr. R. Harvey bequeathed nearly all his property to his solicitor, Mr. P. P. Smith, of Truro. I should say that a large portion of the wealth was derived from profits in mines, and from Messrs. Harvey's partnership with Williams, Foster, and Co., as copper smelters. Mr. Collan Harvey was a brother-in-law to the late Mr. John Williams, of Scorrier. Mr. Williams having married Mr. Harvey's sister. Mr. James Harvey, Mr. Collan Harvey's brother, died about 12 years ago, leaving property of the value of 350,000*l.*—which, having no son, he left to his only daughter and her children. The daughter has since died, so that all the Harvey's are off life's stage, on which, so far as I know, they did no appreciable good, and I charge them with no harm. From his relationship to Mr. J. Williams, Mr. Collan Harvey secured the advantage of supplying the numerous mines belonging to Messrs. Williams and Co. with almost every article consumed at their mines, which were very numerous, during a period of about 60 years. The following mines were worked by them:—North Downs, Treskerby, Wheal Chance, Wheal Rose, Halenbeagle, Wheal Unity, Poldice, Wheal Unity Wood, Wheal Clinton, Wheal Pink, Wheal Gorland, Old Wheal Jewell, New Wheal Jewell, Wheal Quick, Wheal Damsel, East Damsel, Carharrack, Wheal Maid, Wheal Spinster Consols, United Mines, Clifford, Wheal Friendship, Wheal Basset, and probably 20 or 30 more in other districts. Messrs. Harvey not only had the privilege of sending in all the supplies to the mines, but to the miners too, all of whom were expected to come to their shop for all they wanted, which if they failed to do they were reminded that they ought to do it. In some instances money has been deducted from the men's pay when they had taken no goods from the shop, to bring them to the shop for an explanation. I need not say that in some, if not in most, cases the charges were a little above those of other shops, but the goods were said to be better.

On every pay-day at each mine belonging to Messrs. Williams and Co. a clerk from Messrs. Harvey's office would regularly attend and take up the amounts due from the men, and then dine with the

agents. The last clerk so employed was Mr. Benjamin Matthews, of St. Day, who died about two years since, and whose widow died a few weeks ago, whose only surviving child, a daughter unmarried, is about to leave St. Day to reside in London. The house attached to the large shop in which Messrs. Harvey carried on their business will then be vacant. Except those premises Mr. R. Harvey sold off all his property in Cornwall a few years since. Trenithick estate, in St. Agnes, now the land of Mr. J. Jose, was Mr. Harvey's.

I think it is extremely wrong to compel men to take up their supplies at any particular shop; they should be left free to buy where they please. I know not that there is now any such place in this county, and I hope that the truck system will everywhere become a thing of the past.—*St. Day, July* 16. OBSERVER.

MINING IN THE COMBMARTIN DISTRICT.

SIR,—At the Combmartin Mine progress is making with dressing the first parcel of silver-lead, but as usual in such cases not quite so fast as expected, having had dressing-floors to get ready, and had to remedy several obstacles, such as securing leat and obtaining additional supply of water, &c., all of which is secured, and the lead is now being dressed with all possible dispatch. There will not be half the difficulty to dress the second 10 tons as the first, as there should not now be any let or hindrance. The mine is progressing successfully since the commencement considering the difficulty of clearing shafts and levels where the air is foul. When this is remedied by communication with air-shaft or otherwise it will be found that the Combmartin Mine is a success, and will bear comparison to any mine started in Devon or Cornwall for some time past. It being a dry mine 40 fms. from surface with levels being driven on course of the lode producing over ½ ton of silver-lead per fathom, and having at the present time hundreds of fathoms of ground to stope away at a profit.

WEST COMBMARTIN is situated immediately adjoining the Combmartin Mine, and having the same run of lodes. Two adit levels are being driven. One of the lodes is producing rich silver-lead, and is improving every fathom driven. Great results are looked forward to by extending the level further into hill, as the character of the lode is all that can be desired to produce large quantities of silver-lead.

EAST COMBMARTIN.—The grant of this property is obtained, and shortly to be started on the cost-book system. The lodes in this property have already been sufficiently developed to ensure success.

There is little doubt but North Devon will become a great mining centre, the old Combmartin Mine having been extraordinarily rich in the production of silver-lead ores in former workings; and, notwithstanding the low price of tin and copper, it is satisfactory to know that there is some mining enterprise moving in this locality. A mining company is in course of formation to work an extensive property, and from the well-known capabilities of the Chairman satisfactory results may be relied on. R. K.

July 18.

WHEAL GRENVILLE—MACHINERY.

SIR,—Living a long way from the place of meetings I cannot attend them. I think, however, the determination of the meeting to erect a new engine a wise one; but I am told some of the pitwork is not worthy of the name, and yet it is being used, or is on the mine for the purpose. Now, I would ask the committee, if this is really a fact, if they are not making a great mistake in using materials that are bound to give way in working? It would be far wiser to have bought all new when they were about it—the difference in the cost I am told would not have been an extra shilling call; as it is I expect shortly after the new engine gets to work to hear of a grand smash amongst the rods and pitwork, which will cause another great delay and another great expense. I can only say I hope I have been misinformed, and if any of your readers in the next Journal can ease my mind on this question I shall feel obliged. Our secretary, Mr. Laws, seems generally up to the mark in replying to any letters not containing facts—will he reply to this, and state that to his knowledge the materials being used are entirely satisfactory, as I understand he has lately been on the mine, and being connected with mining for many years his opinion would be at least worth having, besides much obliging— A DISTANT SHAREHOLDER.

July 19.

WEST BASSET MINE.

SIR,—Shareholders in mines generally will be glad to learn that West Basset has improved at three different places since last meeting, and that more tin is now being sold weekly although there are fewer men by 50 employed; thus there is a clean saving of 250*l.* per month in labour and materials. One of your contemporaries in Cornwall has circulated a report that West Basset is 45,000*l.* in debt, although the same gentleman, if we may so call him—but I call him a Russian wrecker, who, under pretence of saving his neighbour's property—has by the circulation of false statements destroyed it. The manager of the mine told the shareholders at the last meeting what those liabilities were, yet the unscrupulous wolf has insinuated through his local issue statements the reverse of the truth. We are assured on the best authority of one intimately connected with the mine that there are from 7000*l.* to 8000*l.* in tinstuff broken and paid for, but not stamped. As in private affair, so in matters public, riches do not always flow; but there are times when property has its flow also, and must be endured. Work must be done and ground driven through before riches are reached. It argues a very short-sighted reasoner who ignores all past experience—who seizes the moment of poverty in the end to decry and ruin his fellow-shareholders. It reminds me forcibly of the man who never did or could lift his hand to raise a brick to build, but the moment the lime had lost its cohesion to the brick he would loosen it further until he brought down the house. To strike a man that is down is the coward's opportunity.

The present depression in trade generally, and in tin in particular, is not confined to Cornwall, but extends to Singapore and the Straits. The closing of stream works in the Straits is as frequent as that of mines in Cornwall, but for the same reason that the decreased production of tin does not immediately show as in abandoned mines, so we have not yet had that decrease so manifest as we hoped. There can be little doubt the greatest economy and the best efforts are now required, not only in mining but business generally, to make receipts equal the expenditure. More mechanical labour will as a necessity find employment in opening up our mines and returning the tin when raised. —— W.

BEDFORD UNITED MINE.

SIR,—I have watched with considerable interest the operations that are in progress under the new management, for it is to this change of directory that the shareholders are bidden to look to be healed of their sorrows. It is this arrangement of the committee which we were told will restore the mine to its once lucrative position. What are the results? Under the old management much ore was raised, and many calls of slight amount were made; under the new management a little ore has been raised, and heavy calls have been made. So far the effects are equivalent in value to the shareholders; this is only making a general statement of results. There are operations being carried out which are open to question and remark, but I will wait, and see what good comes of the work. The last and crowning act of the programme was introduced and carried at the last meeting. By the revision of salaries the committee have effected the enormous saving of 24*l.* per year, and to accomplish it have reduced the pay of the late manager to so small a stipend that with his large family it will give 3s. 6d. per week per head—a little in excess of parish relief, barring the loaves—and this, too, after himself and relatives have spent hundreds of pounds in the development of the property; 'tis an evil stroke of genius to compensate a man in this manner; and then the purser, who, forsooth, a little while ago was unwise enough to reduce his pay, has now to submit to a further reduction after 30 years of faithful and efficient servitude, a man whose character is blameless so far as it is related to his duties, and who is without fault in this respect, except it may be in the opinion of the committee or secretary, who I am told is an expert at fault-finding. From whom did this proposal come? Not, I should say, from Mr. Bayly or Mr. Thomas, nor from the secretary, who, apparently, is the fast friend of the purser; nor, I should hope, from Capt. Goldsworthy. I trust he is not tainted with the general defects of the Cornish agents who have made their residence here—in a word, that he is not slippery. I do not suppose your readers will be furnished with an answer to this question, as none of the persons referred to will care to have their names associated with an act which, to say the least of it, bears the impress of injustice. There is a subject which ought to have come up at the meeting. It is this—Is the secretary an overpaid or underpaid official? I should prefer seeing all officers of a company remunerated in such a way as to prevent them from dabbling in shares, or at all events to allow them no excuse for efforts in this direction.

Gunnislake, July 16. W. B.

Meetings of Public Companies.

NERBUDDA COAL AND IRON COMPANY.

The adjourned ordinary general meeting of shareholders was held at the offices of the company, Finsbury-circus, on Tuesday,

Mr. SAMUEL J. WILDE in the chair.

Mr. F. R. BLUETT (the secretary) read the notice calling the meeting; the report of the directors was taken as read.

The CHAIRMAN said the report entered so fully into all matters connected with the company that he should not have many remarks to make on the present occasion, but he should be ready to answer any questions which any shareholder might wish to put. He was sorry they met under such very different circumstances to last time, when they thought they had overcome all their difficulties, everything was going on favourably, and they were making good profits, with the prospect of earning better. But a change had come over the affairs of the company since, as there had come over most other coal companies during the past year. First of all there was a very serious outbreak of cholera, which shut up the mine entirely for a month, and though the company lost no European employees, still a large number of natives died, as well as their families. The works, as he had said, were entirely stopped for some time, and were impeded a considerable time longer. Then there was a hurricane, which did a considerable amount of damage, which, although not large, led to the expenditure of a considerable sum of money, as it took the roofs off several of the houses. Then came the fire; at first, the directors thought this was a very trivial matter, the manager did not tell them much about it, and, as far as he could ascertain, it certainly was confined to a very small portion of the mine indeed. However, they were not able to put it out, and they were obliged to shut up a large portion of the mine for the purpose of checking the fire. That hindered the working, not that there was much coal lost, because, as they were working backwards, the coal consumed was simply in pillars. Those pillars were large and numerous, because whilst they were making progress in other portions of the property they were taking away the pillars which were cheaply and easily worked. Therefore the fire interfered with the output very considerably for a time. Since then the works had been continued more vigorously in other portions of the mine, and that difficulty was gradually being overcome, and they were getting up to their former output, although both the old and the new managers thought it was not prudent at present to open the shut up portion, thinking that the fire was not quite extinguished. There was no fear whatever that the fire would spread, but they thought it better to keep it shut up rather than open it a day too soon, with the chance of the fire spreading again. The so-called contract (for the regular contract had never been signed) with the Great Indian Peninsula Railway Company expired on Dec. 31, 1875, since which time the company had still been delivering coals, through not exactly on the same terms. The directors were trying to make arrangements for a new contract, but whilst negociations were pending he would not say any more about it. As soon as anything was settled the directors would take care to let the shareholders know. One matter of dispute between this company and the Great Indian Peninsula Railway Company was as to the value of the company's coal as compared with English coal. The railway, too, naturally wanted to depreciate the coal as much as possible, whilst the directors of this company thought the coal was far better than the railway company said it was. He would just read a few lines from a memorandum forwarded by the Government of India to the Government of Nizam on the subject of coal. It did not refer to the Nerbudda coal, but to the Wurrora coals, which he and his fellow-directors considered was inferior to the Nerbudda coal—in fact, he thought there could be no question about it. What the Government of India said about the Wurrora coal was as follows:—

There is really no evidence to show that the value lately assumed on the Great Indian Peninsula Railway of 33 Wurrora coal to 20 English should be upheld. The mode of feeding, fire bar spacing, and even the personal opinion of engine-drivers, all influence the value of coal burned in locomotive engines to such an extent that this ratio of value must be accepted with hesitation until further trials give more certain data. It was stated lately that the East Indian Railway engineers consider the Kurhurballee coal quite equal to English. Formerly it was reckoned to be 20 to 30 per cent. inferior to English; it is quite possible, therefore, that Wurrora coal may also rise in estimation as empared with English coal.

Well, as he had said, that was an extract from an official memorandum from the Government of India, and this company's coal was certainly better than the Wurrora coal, and if the Wurrora coal was almost as good as English coal the Nerbudda coal must approach the English coal still nearer in goodness. Since the last meeting the directors had sent down 26 tons of the company's coal to the Bombay and Baroda Railway to be tested. As far as the directors were concerned it was not picked coal, but was selected by the locomotive superintendent of the Great Indian Peninsula; and, therefore, there was no doubt the selection might be looked upon as perfectly fair. Those 26 tons were carefully tested by Mr. Carroll, the locomotive superintendent of the Bombay and Baroda line, and he reported that the coal, being fresh wrought, was only 22 per cent. less in value than the English coal used on that line. Of course the English coal was not fresh wrought, but was English coal which had been imported into India? This question of the value of the Nerbudda coal as compared with English coal was an important item in the negociation for fresh contracts. The time of Mr. Maynard, the late manager at the mines, having nearly expired, the directors thought it would be as well not to continue him in the office, and, therefore, they selected a new man—Mr. Maughan—who was a gentleman of considerable experience, and exceedingly well educated. This was important, because a gentleman of education was necessary to represent the company there, because he had to mix a deal with other gentlemen. From all the directors heard, Mr. Maughan was giving great satisfaction to those whom he met in the way of business, and the board hoped Mr. Maughan would go on more satisfactorily with the business out there than the late manager had done. As regarded the quantity of coal, Mr. Maughan, in his report, estimated the quantity to be very large, and the board thought that it might be possible that he had not taken into account the number of dykes he would fall in with, but in a letter received only yesterday Mr. Maughan stated he was right as to the quantity, except on one point—he had taken 1500 tons per foot per acre. The rate at which English coal was taken was 1000 tons per foot per acre, and he thought the English calculation would be nearer the mark, but even if they reduced the 1500 tons by one-third it would still leave a large quantity.

A SHAREHOLDER asked whether that calculation was for that portion of the mine which had already been opened and worked?

The CHAIRMAN said it referred to the coal which had been opened up by shafts and inclines, and was exclusive of the Mulpee Plain coal. They expected to get much better coal when they were deeper down, because the deeper they went the better was the coal. As regarded the question of labour, experience showed that if they treated the natives well there was no difficulty in getting labour. The directors had succeeded in getting the shares consolidated; this was satisfactory, as it reduced the liability by two thirds, and every five shares which formerly had a liability of 3*l.* had now a liability of only 1*l.* It would be satisfactory to the shareholders to know that the accounts in India had been examined by Mr. Woods, one of the chief officers of the Bombay and Baroda Company. In conclusion, the Chairman moved the adoption of the report and accounts.——Mr. J. HAWKINS seconded the resolution.

A SHAREHOLDER thought the expenses somewhat high.

Mr. BROWN, an original shareholder, said that after having had no dividend for many years it was very satisfactory to know that the company was now making fair progress. As regarded the expenses, he reminded the honourable shareholder who had raised the question that there was an establishment here, and also an organisation in India, which was capable of producing double the amount of coal, but as the output of coal last year was small the percentage of expense, of course, was greater than when the output was larger. The company seemed to labour under the disadvantage of having only one customer, who, of course, tried to get the coal on the best terms possible. He, therefore, hoped the directors would do all they could to find customers in other places. He saw by a recent report that the East Indian Railway had large quantities of coal supplied them from the Government beds. He should like an assurance from the directors that they were able to supply a much larger quantity of coal than during the last year, which had been about 1200 tons per month; they never could get a good dividend with that amount, but with 2000 tons a month they would do well. He was glad to hear what the Chairman had said regarding the character of the coal. He thought the shareholders were very much indebted to the directors for having stuck to the ship. He was pleased to hear that the directors had great confidence in the new manager, upon whom a great responsibility rested.

Col. THURBURN asked what were the results of the explorations for copper?——The CHAIRMAN said there was no recent news, but the sinking was still continued.

Col. THURBURN: I know the country is crammed full of copper. I have been there often.

The CHAIRMAN said that Mr. Browne had really answered the question about the expenses. Of course, the expenses must be nearly, if not quite, the same as in the previous year, when the profits were much larger. As regarded the expenses in England, he did not think there was a company more cheaply managed. The great object of the directors was to keep down the expenses as much as possible consistently with economy. It was true that at present they had but one customer, but there was no reason why in the future they should not have other customers. He pointed out that the State railways will be opened shortly, and there were other sources from which they might expect to obtain customers. He referred again to the value of this company's coal, and read extracts from a report by Mr. Oldham on the coal resources of India, in which this company's coal was placed third in the order of merit. From what the new manager said it was merely a question of time to increase the output. Perhaps, under the old managers the money had not been expended quite so judiciously as it might have been, but at the same time some allowance must be made for opening up a new mine in such a country as India, where the ground was not so well known as in England. The new manager had already reduced the cost of raising the coal, but it was a matter of time to proceed further in that direction, because it was difficult to get the natives into new habits.——The report was then adopted.

On the motion of the CHAIRMAN, seconded by Mr. J. R. MANNING, a dividend of 2*l.* 10s. per cent. was then declared.

The CHAIRMAN then moved "That the two items of 'Forfeited shares—amount received on 765 shares, 262*l.* 15s.,' and 'Fines, 81*l.* 7s.,' be transferred to the 'mine properties' in reduction of the balance." He explained that this was simply a matter of book-keeping.——Mr. MANNING seconded the resolution, which was carried.

The retiring directors—Mr. J. R. Corbett and Mr. S. Lloyd Foster—were re-elected, and the auditors were re-appointed.

On the motion of Mr. BROWNE, a vote of thanks was passed to the Chairman and directors, and the meeting broke up.

CAPE COPPER MINING COMPANY.

The 14th ordinary general meeting of shareholders was held at the Cannon-street Hotel on Wednesday,

Mr. EDMUND A. PONTIFEX (the Chairman) presiding.

Mr. J. C. LEAVER (the secretary) read the notice calling the meeting, and the report of the directors was taken as read.

The CHAIRMAN said that the report and accounts dealt with a year which had been gloomy and unfavourable in almost every particular. The returns of ore which had been obtained from the mines had been less in that year than in the previous one, although not to any great extent. During 1876 they had raised 11,273 tons, whereas in the previous year they raised 11,483 tons. The assay of the ore so raised had also fallen somewhat; last year, if they would remember, he called attention to the fact that the assay of the year with which they were then dealing was lower than it had been at any previous time, having fallen from 32 or 33 per cent., which it had previously reached, to 29 per unit. During the past year the assays of the ore had further fallen by one-half per cent., and had averaged 28½ per cent. only. Arising, of course, out of the fact that smaller returns had been obtained, the mining cost had increased from 3s. per unit in 1875 to 3s. 3*l.* per unit in the past year. This was a matter of necessity, because the fixed charges being divided over smaller produce, the cost per unit would increase with a diminution of returns. To make matters worse, the market price of copper had been considerably lower during the past year than in the previous year. In the previous year the average price was 5d. per unit less than in 1874, and the price realised for the ore in 1876 showed a further drop of 1s. 5*l.* per unit, being 14s. 7d. in 1876, against 16s. in 1875 In face of this diminished raising, lower assay, and greater cost, it was not surprising that the profits had materially declined. In 1875 the profits were 95,547*l.*, and in 1876 only 85,769*l.*—a diminution of no less than 11,778*l.* between the two years. In comparing those profits he took the actual profits of the year apart from the balance brought forward, and also apart from the exceptional charges such as occurred last year, arising out of the loss of the Lizzie and the relief of distress in Namaqualand, which amounted altogether to between 5000*l.* and 6000*l.* The diminution in the price realised for ore amounted to the sum of 23,000*l.*, and the difference between that and the amount to which the loss had been attenuated was the measure of the economies which they had been able to effect in the general working of the undertaking. Those economies almost entirely arose out of the improvements due to the railway, aided to the extent of 2200*l.* by the reduction in the cost of interest and discount, but even that latter reduction was also, to a great extent, due to the railway, because by enabling them to get the ores to market more quickly they saved, of course, considerably in the charges for interest. Although the economies thus effected had been very considerable during the year, the directors believed that further economies could and would be effected during the current year. The importance of keeping up the returns, and the effect of even a small diminution in them, was strikingly shown by the results. He had mentioned that out of a produce of between 11,000 and 12,000 tons they had fallen off in the year only 210 tons, and the assay had only fallen off ½ per cent. on an assay of 29 per cent., yet that small proportion had made so great a difference that it meant a less profit of 9000*l.* in the year. The continued diminution in the general cost of the undertaking was the most favourable feature he had to call their attention to, for the last two or three years they had been gradually reduced, notwithstanding that the mining costs had been somewhat increased. In the year 1874 the costs were then considerably reduced, until they amounted to 10s. 9d. per unit, in 1875 to 10s. 2d. per unit, and in the year 1876 to 9s. 10d. per unit, and but for the falling off in the produce they would have been reduced to 9s. 3*l.* per unit. This improvement in what may be called the mercantile business of the company more than counterbalanced the increased cost of mining. The general result of the operations during the past year was so seriously a diminished profit that it rendered it necessary that the directors should greatly diminish the amount they had been in the habit of setting aside to the reserve and the sinking funds. They had been in the habit of putting a considerable sum to the sinking funds, but this year they had only set aside the sum of 3200*l.*, which had been placed to the landed estates and building fund, and they had not placed anything to the reserve fund, and as the profit earned was a little over 85,000*l.*, and out of that they had divided 80,000*l.*, and paid the income tax upon the dividend, it became a question with the directors whether they should continue to pay the same rate of dividend. However, they had done so, and they were encouraged to do it, because they saw that although the results of last year were not so satisfactory as they had been in the habit of having, yet they saw the results of the following year promised to be more favourable. (Hear, hear.) The reserves of ore in the mine continued to increase, so they could always see something more ahead. In 1875 the reserves were 37,806 tons, but in 1876 they were 38,115 tons, so there was plenty of stuff to work upon, and the shareholders might rely upon it that the reserves had been estimated upon a very moderate basis. But, irrespective of that, during the past five months of the present year the raisings, and the assays of those raisings, had been very materially improved. Comparing them with the five corresponding months of the previous year in 1873 they raised 4440 tons, and in 1876 4258 tons, and during the first five months of the present year they had raised 4750 tons, an increase of considerably over 300 tons in that period. Much more important than the quantity raised had been the richness of that which had been raised. In 1875 and 1876 the assay for those five months was a little below 28 per cent, in one case 28, and in the other case a shade under, but in 1877 for the same time the assay had been no less than 32 per cent., which was due to the increased richness of the ore extracted from the 80 fm. level. It was very satisfactory to know that as they got deeper the richness of the ore increased. The increased output not only gave an increased quantity of ore to sell but it had a startling effect in reducing the cost of what was raised. The cost already during the five months had been reduced to 8s. 9*l.*, as against 9s. 10*l.* In the last year, which made a further reduction in the cost of 13*l.* per unit, and was a striking instance of the effect of any increase in the returns. The result of this increase of returns, and the diminished cost, was that even with the present wretched price of copper, which was now only 13s. 9d. per unit—but even at that low price, with the present rate of returns, and the present assay of ore, they were making a profit of something like 8000*l.* per month, or at the rate of 96,000*l.* per year. (Cheers.) He could not say that those improved results would continue throughout the year. It was mainly due to the increased richness in the lower levels, but as far as they could judge there was no reason why it should not continue. It was disappointing to the directors who had so considerably reduced the costs, and improved the working of the undertaking—it was very disappointing to them to have their efforts negatived by the continued reductions in the price of copper; but, on the other hand, it was satisfactory to know that they had kept up their dividends so well as they had been able to do. (Hear, hear.) In the preceding remarks he had dealt only with the Ookiep Mine, because the Spectakel and Trial Mines were in a condition that they exercised no real influence upon the working, and yielded no profit; at present they did not look very promising, and, therefore, the company had to rely upon the Ookiep Mine. There was a considerable reduction in the amount of the liability as compared with what it was in the previous year; the reduction amounted to 27,000*l.*—from 149,472*l.* in 1875 to 122,278*l.* in 1876, and that was a matter which was continually improving, and the liabilities would still diminish as the ores came forward in a much more rapid manner. With a view to more fully developing and open out the Ookiep Mine, and likewise to work it effectually, Capt. Tonkin had decided to sink an additional engine-shaft at a distance of about 600 ft., from the present shaft. No doubt in the exercise of his judgment and discretion Capt. Tonkin had chosen the most effectual and best point for the purpose. The outlay upon it would not be very considerable. It might eventually necessitate an additional engine and boiler, but altogether it would not cost more than about 5000*l.*, which would be spread over a considerable period, and would not affect the dividends. When the shaft reached a sufficient depth to assist in draining the mine it would form a valuable adjunct to the other shaft, because not only would it improve the value of the mine in the eastern part in which direction the whole of the ore had been trending for some time past, but would also obviate the risk of temporary failure owing to breaking of the engine and pumps, or other contingencies which might occur, and it would relieve the present pumping-engine of very much of the work. In the meantime, pending the deepening of the new shaft, Capt. Tonkin had resumed the deepening of the old one which was discontinued for a time, and the directors hoped that the deepening of that shaft might continue to reveal more deposits of ore. It was gratifying to find that the deposits continued to get richer than before. By the last advices the shaft had reached a depth of 89 fms., and Capt. Tonkin proposed to run it to 95 fms. before striking out levels. In conclusion, the Chairman moved the adoption of the report and accounts.

Mr. OSGOOD HANBURY seconded the resolution, which was put and carried without any discussion.

Mr. JOHN GAISWORTHY proposed the re election of the retiring directors—Mr. E. A. Pontifex and Mr. John Wild. With respect to Mr. Pontifex, he said they all knew the excellent manner in which that gentleman conducted the business of the company, and he was sure the shareholders would unanimously re-elect him. As regarded Mr. Wild, he was known to almost everyone present as possessing an intimate knowledge of the concerns of the company, the affairs of which he attended to with the greatest assiduity. They could not find a better director in the City of London.—The resolution was carried.

The CHAIRMAN acknowledged his re-election, and said that having been a director from the commencement, he took the greatest interest in the company, and would do his utmost to promote its welfare.

Mr. J. WILD said he also had to thank the shareholders for this expression of renewed confidence; he also had been interested from the commencement of the company, and would do all he could to promote its interests. Having been many years at the Cape, he had on two or three occasions had to ask the generosity of the board for little contributions for the promotion of objects which had in view the welfare of the people at the mine, and he certainly must claim for this company the proud distinction that it was a decidedly liberal company. Having begged so much, he really felt that he was getting quite an adept at mendicancy, and he was now about to make another appeal, not this time to the board but to the shareholders. The appeal this time was for the purpose of establishing a church—of an unsectarian character—at Ookiep. Most of the labourers at the mine were now obtained from Damaras and Ovampos, the men from which places were much superior for labour to the men the company employed from other districts. In connection with the church the children would be taught to read and write, and the girls to sew, and he suggested that the sum of 100*l.* would be gratefully received by those who were promoting the movement. (Hear, hear.)

A SHAREHOLDER said he thought the whole meeting would approve of the suggestion, but that the matter might well be left in the hands of the directors with *carte blanche* to do what they thought was right and proper in the matter. (Hear, hear.)

The CHAIRMAN: If you will leave it in our hands we will do what we consider right and necessary. (Hear, hear)

It was then decided to leave the matter in the hands of the directors.

The CHAIRMAN said he had no doubt the shareholders would be pleased to hear a few words from Mr. Taylor.

Mr. JOHN TAYLOR (Messrs. John Taylor and Sons) said he should have pleasure in saying a few words on the state of the mine. The best thing he could say first was that the returns of ore were kept up with great regularity, with a diminution of cost. The directors were still aiming in the same direction. They had now completed the railway (93 miles) without any assistance but that of their own shareholders. That railway was carrying down the ore at a diminished cost, compared with what was formerly the case, and the directors were not yet satisfied that they had come to the bottom of the reduction, and believed that still further economies might be effected. They were now able to carry away the ore as it was raised to the port, where there was a considerable amount waiting for the vessels. Beyond this the secretary was never tired of working in the same direction, and was chartering vessels at lower freights than formerly, and the ore was now being brought in a satisfactory way to the market, and sold by open competition—a plan which gave satisfaction to the company as sellers, and also to the buyers. The state of the mine was improving; it had been very rich, but at no time had the deeper part of the mine been richer than at the present moment. The deepest level which was working, and which was in the 80, was out away from the shaft to a considerable distance, and opening upon profitable ground. The level above that was good, and the ore was opening out on both sides, and there they got a large quantity of ore at a very low price. With respect to the new shaft they were able in a mine to look ahead, and it was the duty of the directors to do so, and keep up the splendid return and splendid profit as long as as they could, and they could only do that by exploring vigorously and getting new sources of supply ready to their hand. The whole establishment was creditable to the company, and everybody connected with it. Mr. Wild had explained what had been done in the way of churches and schools, and what they were doing to improve the character of the people. The expenditure of so large a sum of money as was caused by the working of the whole mine has done an immense deal for the district, which was extraordinarily barren 25 years ago. The railway was also the means of civilisation. Port Nolloth was becoming a place of resort for vessels of all sizes, and near the mine were convenient workshops and houses, and altogether it was a credit to the company to have things in the state they were now. (Hear, hear.) He did not know that there was a single item of expenditure which was not carefully considered by the directors. He could not say that they would have improving results, but they must try to maintain those which they had. They had not been successful in the new trials—they had not found anything of great value, but he thought they would all desire, in such a district where they had such a wonderful mine as Ookiep, that the directors should persevere in their efforts in those trials. (Hear, hear.) The unpleasant part of the business was the extremely low price of copper. There had been increased imports from Chili, the Australian mines had been good, the Rio Tinto was yielding supplies, and the New Quebrada was threatening to bring considerable quantities, and that must have had its effect upon the market; but the consumption of copper all over the world was very large indeed, and would, he believed, go on to increase, and he fancied that the production must be somewhat curbed by the low prices now obtained in the market. He might mention that his brother and himself were constantly suggesting improvements for hauling, pumping, and washing the ore. Everything at the mine was in a satisfactory state, and the ore was being raised, washed, and sent to market at a remarkably low price compared with other mines similarly situated.

A SHAREHOLDER asked whether a boring machine could not be used in making the exploration?——The CHAIRMAN said that owing to the nature of metallic deposits any results obtained from a boring machine could not be depended upon, and, in fact, might be misleading.

Mr. JOHN TAYLOR corroborated the statement of the Chairman on this point; and said, moreover, there was no occasion to use boring machines so long as the levels going into virgin ground opened up what the directors hoped to find.

A SHAREHOLDER proposed a vote of thanks to Mr. Carson, Captain Tonkin, and the other officers in the colony for the excellent manner in which they had discharged their duty.——A SHAREHOLDER seconded the resolution.

The CHAIRMAN, in putting the resolution, said it was well deserved.

The resolution was carried.

A vote of thanks to the Chairman and directors closed the proceedings.

WEST GODOLPHIN MINING COMPANY.

The general meeting of shareholders was held at the company's offices, Great St. Helen's, on Tuesday,—Mr. R. WILSON in the chair.

Mr. CHARLES THOMAS (the secretary) read the notice convening the meeting, and the minutes of the preceding one, which were confirmed. The statement of accounts, showing a credit balance of 1362*l.* 11s. 2d., and the subjoined report of the agent, were also submitted to the meeting.

July 14.—I herewith hand you statement of work done in the past four months distance driven and sunk in the different levels and shafts to the present date, with the value of the lode in the different pitches:—Caunter: Pressure shaft has been sunk below the 60 4 ft., shaft divided and cased from the 60 to the 70, ladders fixed, plat cut at the 70, and level driven north 2 fms. The 60 has been driven north on the western part of the lode 5 fms. 3 ft.—Wilson's: The 50 has been driven west 1 fm. 2 ft. 3 in. A winze has been communicated with the 60 west; sunk 1 fm. 5 ft. 5 in. The 50 has been driven east 2 fms. Boulton's shaft has been sunk below the 50 7 fms. 2 ft. The 40 has been driven west 1 fm. 3 ft 9 in. The deep adit has been driven west 6 fms. 5 ft 9 in.—Pink: The 50 has been driven west 4 fms. 2 ft. 9 in.—Caunter: In Pressure shaft, sinking below the 70, the lode is 10 ft. wide, but not so well defined as it was some little time since, full of small branches, and some of them rich tinstuff; worth for the length of the shaft 40*l.* per fathom; sunk 3 feet. In the 70, driving north, the lode is 1 ft. wide, low-price tinstuff; driven 2 fms. 1 ft 6 in. In the 60, driving north, the lode is in several branches for the whole width of the level, each producing a little tin; driven 7 fms.—Wilson's: In Boulton's shaft, sinking below the 50, the lode is 1 ft. wide, low-price tinstuff; sunk 8 fms. 2 ft.—Wilson's: In the deep adit level driving west the lode is 3 ft. 6 in. wide, worth 4*l.* per fathom; driven 16 fms.—Pink: In the 50 driving west the lode is 1 ft. wide, producing low-price tinstuff; driven 11 fms. 4 ft. 6 in.—Wilson's; In No 1 stope in back of the 60 west, the lode is 6 ft. wide, worth 20*l.* per fathom (tin). In No 2 stope in back of 60 west the lode is 4¼ ft. wide, worth 10*l.* per fathom (tin). In No. 1 stope in back of the 60 east the lode is 12 ft. wide, worth 25*l.* per fathom (tin). In No. 1 stope in bottom of the 50 west, the lode is 12 ft. wide, worth 30*l.* per fathom (tin and copper). In No. 2 stope in bottom of the 50 west the lode is 10 ft. wide, worth 15*l.* per fathom (tin and copper). In No. 3 stope in bottom of the 50 west the lode is 10 ft. wide, worth 15*l.* per fathom (tin and copper). In No. 4 stope in bottom of the 50 west the lode is 5 ft. wide, worth 10*l.* per fathom (tin). In No. 5 stope in bottom of the 50 west the lode is 5 ft. wide, worth 10*l.* per fathom (tin). In No. 1 stope in back of the 50 west the lode is 6 ft. wide, worth 8*l.* per fathom (tin). In No. 2 stope in back of the 50 west the lode is 2½ ft. wide, worth 4*l.* per fathom (tin). We have employed on the mine 161 men, 30 boys, and 23 girls = 214. In addition to our general working underground in the past four months, which has been retarded very much by reason of the water being too quick for our present engine, especially in the first and second months, we have sent to surface and returned to Messrs. Harvey and Co. the 30 fms of pitwork that we borrowed of them when we had the water in the mine, enlarged Pressure shaft in several places above the 30 preparatory to fixing the new pitwork, built the new engine-house, and bronght the engine and boilers, main rods, and the greatest part of the pitwork on the mine; the engineers are now engaged erecting timber winches, blocks, &c., necessary for heaving in the engine, and I am expecting to see the main beam of the engine fixed in its place some day next week. The masons will begin to build the boiler-house and loading for whim engine next week, and I am hoping we shall be able to get the engine at work by the end of September. At the stamps we have erected the additional eight heads to the steam stamps, and put in two new round buddles. Everything is being pushed on as fast as possible, and I am hoping when we have the new engine erected, so as to have the mine kept properly drained, that we shall be able to prove that we have a very valuable property. I calculate that we have at surface in the way of dressing about 80*l.* worth of copper ore. The amount of tin sold this month is 64*l.* 15s.—JOHN POPE.

The CHAIRMAN said that since the last meeting they had purchased the Great Wheal Vor engine for 1000*l.*, which he thought was a fair price for both seller and buyer; it was an excellent engine, and would take them down if necessary to 200 fathoms. They had had two or three breakages to the flat-rods, which had occasioned some delay, but the report showed that their progress had not been unsatisfactory. The loss had been 617*l.* 17s. 9d. on the four months' work, but in the previous four months they made 716*l.* profit, so that on the eight months' working there was a profit of about 100*l.*, which owing to the extreme depression prevailing, was better than had been done at many mines, especially considering the constant breakages and other difficulties they had had to contend with; the last sale of tin was at 39*l.* 10s. per ton—the lowest ever received. They intended to get up the new engine as quickly as possible, and drive on to Wilson's lode, and with anything like a rise in tin they might fairly hope for profits. He concluded by formally moving that the report and accounts be received and adopted.——Mr. BOULTON seconded the motion.

Mr. CHARLES THOMAS, in reply to questions, stated that the calls unpaid at the date of the balance-sheet amounted to 221*l.* 2s. 6d., but one or two items had since been paid. There was one question upon which he would like to receive instructions; one gentleman had deducted the discount for prompt payment upon his two last calls, although he had not paid them on the prompt-day—the last was paid 18 days afterwards. He did not like to refuse the cheque, but would like to be instructed whether he should inform the shareholder that the balance must be remitted, or whether the amount should be debited in next account.

The CHAIRMAN said that as the insufficient remittance might have been made in error it would be better to write for the balance. Of course no margin could be allowed in the discount payable on calls, as otherwise the advantage of allowing the discount would be neutralised, as everyone would pay as he thought fit and still deduct the discount.

The report and accounts were then unanimously adopted, and thanks having been voted to the Chairman the proceedings terminated.

BELL ABBEY AND FALCON CLIFF MINES.

The annual meeting of shareholders was held at the registered offices of the company, Colonial Buildings, Dale-street, Liverpool, on Wednesday, July 11.

RALPH FAWSETT AINSWORTH, M.D., F.L.S. (Director of the Manchester Royal Exchange), presided.

The statement of accounts, as sent to each shareholder, was approved and passed.

The following report by the directors was taken as read and approved:—

In now presenting the first year's balance-sheet of this company, your directors see no necessity for a lengthened report on the mine, having already this month sent to the shareholders the very able and satisfactory reports of Messrs. Walter Eddy, John Kitto, William Kitto, and Richard Barkell, together with a prospectus and plans of our property, showing very clearly the various intersections of the known lodes, the underground workings, and the surface machinery, our intention being to obtain subscriptions for the unallotted shares of the first issue, so as to enable the company to extend its operations to those points to which so much importance is attached, and where your directors are quite satisfied speedy success cannot fail to be achieved, in which belief they are fully borne out by the following quotations from the reports referred to:—

From W. EDDY and J. KITTO—"It is in exactly similar positions that all the productive mines, particularly Great Laxey and Foxdale, have made their great bodies of ore."

From W. KITTO—"When you are in a position to employ more labour, allow me to urge that this be one of your first operations. I believe you may safely rely on the results."

From R. BARKELL—"Every miner knows that it is at these intersections that success, as a rule, is secured; and I rarely hope you may, without further delay, instruct me to begin operations upon a more extended scale. With your intimate knowledge of the nature of the various lodes, you at least cannot doubt the result."

Since the date of these we have shipped another small cargo of ore, which would have been considerably larger were our arrangements for dressing more complete; and our agent continues to report an increased yield in the several parts of the mine which we are advised to let on tribute when prepared to start work northwards. It is, therefore, confidently hoped that each shareholder will influence his friends to at once apply for shares, so as to enable the directors to carry out the recommendations of their engineers without further delay; by doing so we are very confident everyone will be amply repaid, as, in our opinion, the only element wanting is sufficient funds to develope the property.—R. F. AINSWORTH, M.D., Chairman.

The CHAIRMAN at some length commented upon the various points raised by these reports, stating that the directors were more than ever satisfied of the certainty of success, and that nothing was wanting to ensure it but sufficient funds to develope the property. He was sure anyone who would take the trouble to enquire as to how the directors had hitherto managed it, the nature of the terms upon which it was reconstructed, the new features belonging to the property, and the ore now being raised, could not fail to be perfectly satisfied that the concern was of most unusual promise, and certain to well repay those who would work it efficiently. He could hardly imagine that any (at least of their personal friends) would hesitate to invest along with them; and he hoped as the directors desired to induce those whom they knew to join them, rather than obtain shareholders by the very expensive process of promiscuous advertising, that those already interested would introduce it to such of their friends as might have the means and disposition to invest. He felt sure that with the very encouraging and reliable information it was in their power (more especially in their secretary's power) to give, no reasonable person could fail to be satisfied.

Mr. EDMUND BUCKLEY, in seconding the passing of the accounts and report, fully endorsed all that had been said by the Chairman, and hoped each one would assist materially the increasing value of the mine by adopting the plan of giving their secretary introduction to such of their friends as were at all likely to become shareholders: he felt sure they would not regret doing so.

The SECRETARY then read the following report from Capt. Barkell, and by the aid of the plans and sections replied fully to questions put by the shareholders, and explained the nature of the various workings and the extent of ore ground now being opened up:—

July 9.—36 Stope: The lode in this stope is from 6 to 8 ft. wide, with a good mixture of lead and blende ores throughout. The yield of ore at present is more than it has been hitherto. The congenial appearance of the lode and its matrix indicates a greater body of ore near. A sump is being sunk in the sole of this level (36) about 5 fms. south of said stope to prove the continuance or otherwise of this shoot of ore below; the lode in it is only about 18 in. wide, chiefly spar and blende, with a little lead.

24 North: The series of trials that are being made here, both in the roof and sole, have not resulted in any great discovery, although there has been, and still is, some very good stones of lead, copper, and blende ores broken. The trial now being made is in the sole of the said level, some 20 fms. north of the stope in the 36, and the lode is gradually widening going down, and yielding more blende, but not enough to pay for working. The object in view in making these trials is to find out the run of ore below. I think we are on the right track to discover it.

24 South: The lode here for the last 5 fms. has yielded some good stones of copper, and some 15 wagon loads have been saved out for the washing-floors; you are aware the driving of this end was resumed some two months ago; the lode in it then was about 20 in. wide, composed of spar and iron; it is now 4 ft. wide, consisting of friable spar and killas, with stones of copper and lead ores. The character of the lode having changed, and the end getting in the neighbourhood of known cross-courses, makes this a point of more than ordinary interest; as the end is advanced my opinion is being strengthened that good results will follow, and should not be surprised to see a good lode in this end any day. I would remark here that this end has nearly drained the old shaft in the Glen sunk by the former party; it is reported here that there is a nice rib of lead left in it; at any rate, this letting the water down proves the lode to be porous, which is a good indication.—R. BARKELL.

Mr. F. J. EATON, in proposing the re-election of Messrs. R. F. Ainsworth, M.D., and E. Buckley, the retiring directors, expressed his strong sense of the great care, intelligence, and prudence which those gentlemen had brought to bear upon all matters connected with the working of the company, and he resolute manner in which they had assisted in bringing it into its present very hopeful position—he was certain that were their friends and the public aware of the real merits of the concern, and the most unusual amount of personal supervision devoted to its practical and economic management, they would have no occasion to seek for share holders to assist in its development.

Mr. E. W. BIRD, in seconding this proposition, said that although they had not as yet reaped a commercial success (which, of course, meant the declaration of a dividend), the work done had distinctly proved that they possessed a much larger and more valuable property than they had at first expected, although they then paid a larger sum for it than the present company were now doing, after all the machinery had been erected, so much work done, ore found, and conditions of lease improved, and no doubt could exist as to the result being eminently satisfactory if the necessary capital was provided. His own feeling was that if the mine had answered their expectations by returning dividends in its earlier stages, it would not now have been nearly so important and highly valuable a property as it is. His meaning was that the partial want of success in the first instance had caused them to take steps which had quite altered their prospects for the better, by showing that they possessed not only one but several mines.

In responding, Dr. AINSWORTH said it gave him great satisfaction to preside over a board whose sole object was the permanent success of the mine, towards which no amount of necessary attention seemed to be considered a trouble on the part of his fellow-directors.

VAN CONSOLS MINING COMPANY.

An extraordinary general meeting of shareholders was held at the Guildhall Tavern, Gresham-street, on Tuesday.

Mr. ADAM MURRAY, F.G.S., the only acting director, was called to the chair.

The CHAIRMAN, in opening the proceedings of the meeting, said that the shareholders would have learned from the notice by which they had been called together that the object of the meeting was to take into consideration the present position and prospects of the company, and, in consequence of the break down of Mr. Greene, to appoint a secretary and director in his place. Power was also taken in the notice to appoint one or more additional directors, and to transact such other business as might be deemed expedient, and to pass resolutions thereon. The meeting was thus invested with very full powers, and he trusted those powers would be exercised to the advantage of them all. He then proceeded briefly to state the prospects of the mine, to which he had paid considerable attention. He described them as unchanged—as good as when he had an opportunity of addressing them last autumn. The delay which had occurred since then in bringing the mine into a profitable position was owing to a collapse at the base of the new shaft for this new drawing and ventilating shaft—which was projected to economically work the valuable and extensive seam or seams of lead which had been discovered below the great masses of barytes, which had hitherto obstructed its regular formation—had just been constructed to a depth of 80 fms. when this crush happened, necessitating a reconstruction on a more solid basis. This accident was owing to an injudicious extraction of 2000*l.* worth of lead from a position too near the line of the shaft, so after a re-construction it was deemed extremely dangerous to attempt to raise any more ore from the same level, and hence a further delay was occasioned to sink the shaft 10 fms. deeper, which has been accomplished, and the plat and other preparatory work done, ready to commence operations on this extensive lode, when this lamentable break-down of the managing director and secretary stopped all the works. He (the Chairman) then alluded to the energy displayed by Mr. Winser, their solicitor, who was present, in obtaining possession of all the company's books and papers, and defending their interests against so many attacks incidental to the confused state of affairs, and that he came to town immediately to render any assistance he could to Mr. Winser.

Mr. J. JOHNSON WINSER then addressed the meeting, detailing all the events concerning the various attempts to wind up the company, and that he had placed all the books, &c., in the hands of an able mining accountant—Mr. Stansfield—to investigate, and who was present to report on them.

A long and stormy discussion was continued for upwards of two hours, but very little business was done. The general opinion appeared to be that it was desirable to carry on the mine, and, if practicable, secure an amalgamation with the Glyn Lead Mining Company, who are working the adjoining sett. The water has been kept out of the mine by the personal contributions of a few of the Welsh shareholders, and Mr. Pryse Jones remarked that the local shareholders had still the fullest confidence in the property, and that if the English shareholders had been saved as the Welsh shareholders had the mine would have been in a very different position to what it really was. He believed that if the shareholders were united they would get all their money back, but that if anyone attempted to get it all his own way the property would be sacrificed.

In the result a committee was appointed, consisting of Messrs. Adam Murray, J. C. Bolton, Thomas Jones, Henry Sutton, and Henry Toovey, to investigate the affairs of the company and act in the interests of the shareholders, and to negociate with a view to an amalgamation with the Glyn Company. It was arranged that Mr. Bolton should be the convener of the committee, and that the meetings should be held at the offices of Mr. Stansfield, in whose hands the books had been placed for investigation.

It was further resolved that Mr. Stansfield's be the registered office of the company, and that he be requested to act temporarily as secretary.

The CHAIRMAN said he had had a very laconic note placed in his hands by the captain, who asked how he is to keep the water out of the mine without money.

Mr. PRYCE JONES said that the Welsh shareholders had guaranteed to keep the water out of the mine until this meeting, but in doing this they thought they had done sufficient, and that now the English shareholders should do something.

The CHAIRMAN understood from the captain that 10*l.* per week would be required, as he had the order of the Court to find the money.

Thanks were then voted to the Chairman, and the proceedings terminated.

GLYN LEAD MINING COMPANY.

An extraordinary general meeting of shareholders was held at the Guildhall Tavern, Gresham-street, on Tuesday,

Mr. ADAM MURRAY in the chair.

The CHAIRMAN said that most of the shareholders were acquainted with the circumstances that had brought them together, so that it would be unnecessary to repeat them. They were working on the same lode as Van Consols, and he believed the mine would be a very prosperous one. The same shoot of ore goes into both mines, and although, through the lamentable collapse of their managing director, they were in considerable temporary difficulty, the mine itself was as good as ever. They were down to the depth of 51 fms., and the lode had merely fallen off in productiveness through their coming upon a hard bar of ground, which had changed the underlie of the lode. The lode was generally found to be unproductive at those changes, especially in the presence of siliceous grit, which was the rock in which all the valuable lodes in that district were found.

Mr. NORRIS said that immediately upon hearing of the collapse his clients, Messrs. Thomas and Jones, came to London to see what could best be done in the matter. He thought the meeting would agree with him that the affairs of this company were in a very different position to those of Van Consols, as they had never stopped working, and had good prospects. They found that a petition had been presented to wind up the company for 6*l.*, which they got rid off by paying the debt, with 28*l.* costs. He considered that in the present case the best course would be to call another meeting and increase the capital.

Mr. WILLIAM THOMAS said he had a great opinion of the mine, which looked kindly, and he believed it would prove the best for all parties to raise further capital to work it vigorously.

Mr. WINSER said that, as in the other case, he obtained possession of the books and papers, and placed them in the hands of Mr. Cooper, of Messrs. Johnstone, Cooper, and Wintle, for investigation.

Mr. COOPER had only had time to examine the financial accounts (he had not investigated the share account), the result of his examination of these being that he found both sides of the accounts as nearly as possible balanced, there being one or two merchants' claims subject to a set-off, which would make a slight difference. The accounts were all written up, and appeared to be properly kept; they showed that 308*l.* 19s. 9d. due to Mr. Greene, and other debts amounting to 1200*l.* owing by the company.

Mr. TALBOT understood that an engine and other property had been removed from the mine by one of the directors, and he would like to know whether that was true.——Mr. NORRIS said that it was. The director had a lien on the property, and under his advice he took possession of it, but if the company liked to pay the money it could be returned. He would explain that the transaction took place under a power to borrow money given by their Articles of Association. On June 20, the company being in want of money, a directors' meeting was held, Mr. M. Greene, Mr. Thomas Jones, and Mr. William Thomas being present, and the latter undertook to advance 400*l.*, taking the 20 inch engine and stone-breaker as security.

The legality of the course advised by Mr. Norris was questioned in all parts of the room.

Mr. TAYLOR (clerk to the late Mr. Greene) wished to explain the facts of the case. In November last year Mr. Greene pressed that the ore should be dressed, and he need not say that during the winter Mr. Greene had to finance the company. During this year Mr. Greene told him to write Mr. Thomas to advance the 105*l.* necessary to pay a cost sheet then coming due. No answer was given to that letter, but Messrs. Jones and Thomas came to London. Mr. Greene then offered to advance 35*l.* if the others would do the same, but they declined, and Mr. Thomas advanced the 400*l.* on the security of the engine and stone-breaker, it being well understood when the advance was made that the amount was to be repaid when the ore was dressed.

Mr. TALBOT said that as to this matter he was quite satisfied that the directors had no power either under their Articles or under the Act of Parliament to pledge the machinery or other property of the company for a specific debt. As Mr. Thomas had removed a portion of the property from the mine he had as a shareholder to move that the solicitor of the company at once give proper notice to Mr. Thomas that he shall retain such machinery on behalf of the company.

Mr. BOLTON seconded the motion. He did not believe that Mr. Wm. Thomas intended to do anything to wrong the company, but was persuaded from long experience in such matters that the clause in the Articles of Association never contemplated any such pledging as that which had taken place.

Mr. R. JONES thought it suicidal to press the matter unduly. If the seizure were illegal it would be illegal to all time, and he understood that Mr. Thomas required no more than he had actually advanced.

Mr. THOMAS said of course not.

The question of amalgamation was much less favourably received than in the case of Van Consols, but a committee consisting of Messrs. R. Jones, W. Thomas, F. R. Fisher, C. Pryse, of Birmingham, and Arthur Bolton were appointed by corresponding resolution to that passed at Van Consols meeting.——It was resolved to make temporarily the offices of Messrs. Johnstone, Cooper, and Wintle the registered office of the company, Mr. Cooper undertaking to act as secretary.

Upon the financial question being raised, a SHAREHOLDER suggested that the directors ought to carry on the mine, because they had let the shareholders without their knowledge get 700*l.* in debt beyond the ordinary liabilities.

Mr. ARTHUR BOLTON said that as a member of the committee he had no objection to find the money for immediate requirements.

A vote of thanks to the Chairman terminated the proceedings.

PENSTRUTHAL MINING COMPANY.

An extraordinary general meeting of shareholders was held at the Guildhall Tavern, Gresham-street, on Tuesday,

Mr. LABY in the chair.

The CHAIRMAN said that the moment he heard that their late secretary was not at the office he took possession of the books and title deeds, and he immediately placed the books in the hands of Mr. Ashmead, of 62, Cornhill, for investigation. There were no financial difficulties in this company; they had plenty of funds in hand to carry on the mine, and Capt. Teague's reports were encouraging. They had cut a good lode at the 46 fm. level and at the 72 fm. level cross-cut. Mr. Ashmead would tell them how he had found the accounts.

Mr. ASHMEAD said that he had prepared a report upon the share account, and if he gave them the substance of that report it would probably be better than any general statement. Taking the register on the 4th of the present month, he found that 4035 more shares appeared on the register than there should be—that is, transfers of shares had been registered out of the names of persons who had no shares to transfer, but against this there was likely to be a considerable set-off, which would reduce the number overdrawn to about 2000. There were 258 shares standing in Mr. Greene's name, which the distinctive numbers proved to be part of those overdrawn by other names, and transfers, it seems, in his favour had to come in for registration for 1790 shares, also shown by their distinctive numbers to be part of the overdrawn accounts. Then there were several unregistered transfers in and out of Mr. Greene's name, so that taking all into consideration there would remain 2054 shares to be made good. These irregularities did not commence until September, 1876, since which they had been frequent. He had not had time to prepare the financial statement, but they had 1991*l.* 11s. 5d. invested in Consols, and from what he had already seen they had, including 318*l.* calls in arrears, assets to the amount of 633*l.*, and their liabilities up to and including the cost-sheet to May 28 were under 2500*l.* The company had 16*l.* at the bank.

Mr. WINSER stated that Mr. Allen, a stationer, who had presented petitions to wind up the Van Consols for an 8*l.* debt, and against Glyn for a 6*l.* debt, had also presented a petition to wind up this company in the Stannaries Court for a 14*l.* debt, which had put them to 18*l.* 0s. 4d. expense for costs. In this case he was glad to say they had money to go on with.

A SHAREHOLDER thought the mine was just solvent, but could not understand how it was that the mine being so good nothing had been got out of it, and the company had so little money.

Mr. PRUST enquired whether it were true that Mr. GREENE had withdrawn 20,000*l.* of the company's money, and passed the same to his own credit? Mr. Little told him that this was the case, and that through his instrumentality the amount was returned.——Mr. LITTLE said that that was not the statement which he made, and the statement he did make he had no thought of being brought before a public meeting; he had no objection to anything he really said being repeated. The facts were these. Originally the Penstruthal money was at the Cornish Bank and at the West Cornwall Bank, and Mr. Greene complaining that the Cornish Bank did not give the company enough interest got out 15,000*l.* and put it down at Bolitho's Bank in his own name. He (Mr. Little) discovered it, and had it put back. When he found out that it was in Mr. Greene's name he had the question asked through

the London agents of the bank who were entitled to draw the money (Mr. Little was a director at the time), and the reply was that no name was requisite but that of Mr. Matthew Greene, because in a banking point of view it was essentially a private deposit. He sent down notice for the bankers not to part with the money on Mr. Greene's signature alone, and offered indemnity for the bankers so acting. Mr. TAYLOR (Mr. Green's clerk) said it was quite true that the money was in Mr. Greene's name, but it was well known to be Penstruthal money, and not a penny was ever drawn on any other account. There was an altercation with Tweedy's bank, and as Capt. Teague banked at Bolitho's it was determined to put the 15,000*l.* at Bolitho's. It was in Captain Teague's presence handed into Mr. Bolitho's hands as Penstruthal money, and the very first draft on Bolitho's directed him to pay a certain amount as "part of the money I deposited with you on behalf of Penstruthal Mine." The whole transaction was in the minute books of the company, so that his statements could be verified.

It was then resolved that the registered offices of the company be removed to Mr. Ashmead's, and that he be appointed secretary *pro tem.* It was suggested that the cost of agency should be reduced, and Mr. Little remarked that he did not doubt that, as money was not the consideration with him, an arrangement could be made for him to accept a merely nominal remuneration.

The CHAIRMAN, in reply to a statement that the vendor had never received a shilling for the mine, and that the company had, therefore, no property, stated that the title deeds and conveyances, all properly signed and in order, were in his own possession as trustee of the company.

Capt. Walker, R.E., and Mr. H. C. Briggs, subject to the latter accepting office, were added to the board of direction, and almost innumerable propositions were made, modified, and withdrawn, but no other business was done.

It was promised in future the accounts should be forwarded to the shareholders 14 days before each half-yearly meeting, and that the next meeting shall be held in September.—The proceedings then terminated.

CATHEDRAL MINING COMPANY.

An extraordinary general meeting of shareholders was held at the Guildhall Tavern, Gresham-street, on Tue-day,

Mr. LABY in the chair.

The CHAIRMAN said that the books, as in the case of Penstruthal, were put in the hands of Mr. Ashmead, who would give them the result of his investigation.

Mr. ASHMEAD reported that he had gone through the whole of the transfers, and checked the holders of the consecutive numbers from 1 to 10,000. and found that they came out correctly. There were some irregularities in some of the transfer deeds, which were pointed out in his written report, and which he would take the meeting's time in going over. Mr. Greene had acted as the banker of this company, so that he could not at the moment say how the account stood, but it appeared to be rather in favour of Mr. Greene than otherwise on the cash account.—The CHAIRMAN said that he had but little to add. In addition to the 30*l.* owing to Mr. Greene, there were 1200*l.* other liabilities; he had himself already lent 285*l.*, and Mr. Murray 150*l.*

Capt. MICHELL in his report stated that the engine shaft is sunk 71 fms. from surface on the course of the lode, which has varied in size from 1 ft. to 6 ft. in width, and for the last 30 fms. in sinking it has never been without copper ore, which very plainly shows that depth only is required to strike into a continuous course of a rich and lasting lode of yellow copper ore of a similar character that the mines in this immediate district have done, and have given millions of pounds sterling in dividends to the fortunate shareholders. We have in this mine precisely the same indications in every respect as they had in the mines referred to, and I feel fully satisfied that if this mine is fairly developed in a short time the results will be highly satisfactory to all concerned. In order to carry out my views a 50 in. cylinder pumping engine should at once be erected and the pitwork changed, which will about cost, including buildings, from 1300*l.* to 1400*l.*, and will take from three to four months to complete, after which the monthly cost to work the mine as it should be done, including merchants' bills, will be from 160*l.* to 180*l.* By carrying out this recommendation of mine, I believe within twelve months after starting to work that we shall make this mine (Cathedral) worth 100,000*l.* In fact, I have every reason to believe this statement to be correct when, judging from my long experience (30 years) in this district, which is well known to be one of the richest in Cornwall. I have not the slightest hesitation in saying that this mine will turn out equally as good as the adjoining mines—Wheal Jewell and Wheal Damsel—which gave 750,000*l.* in dividends on the same lodes traversing the entire length of our sett, all of which are undeveloped. The size of the lode in the bottom of the engine shaft at present is between 3 and 4 ft. wide, producing rich stones of yellow copper ore, peach, flour-spar, mundic, and quartz; a very promising lode for soon striking into a rich and lasting course of copper ore. The 52, west of engine-shaft, is driven 3 fms.; the lode here is between 2 and 3 ft. wide, of a similar composition as the lode referred to in the engine shaft. In the 52 east the lode is between 3 and 4 ft. wide, composed of fluor-spar and yellow ore, which is a very kindly-looking lode indeed, and judging from the character of the lode in the level above (the 42), will soon strike into a course of ore. In conclusion, I must remark the chance of a great and early success in this mine, in my opinion, is certain, and, comparatively speaking, a small amount of capital—say 5000*l.* or 6000*l.*—will prove it.—J. MICHELL.

A SHAREHOLDER enquired whether it was true that the lords had made a claim of 31*l.* or 32*l.*, and that to satisfy it the engine had been sold.—Capt. MICHELL said that it was true; he had got a friend of his to buy the engine for 50*l.* to pay out the claim, but it was held for the benefit of the company. The liabilities were between 1400*l.* and 1500*l.*, for which money was required at once, and the total liabilities were 5000*l.*, to meet which there was only a little machinery.

After some discussion the registered offices were removed to 6*d*, Cornhill; Mr. Ashmead was appointed secretary *pro tem*, and the meeting adjourned for three weeks. The usual complimentary votes terminated the proceedings.

TANKERVILLE MINING COMPANY.

The annual meeting was held on the mine, on Thursday (Mr. R. WILSON in the chair), when the following report of the directors, with the agent's report and accounts, were adopted:—

Your directors have circulated the balance-sheet, and a full report from Captain Waters, both of which will have informed you of the work done in the past year, and the position and prospects of the mine. You will observe that for the twelve months ending April 20 last 1303 tons of lead ore were sold for 19,451*l.* 1*s.* 3*d.*, being an average of 14*l.* 18*s.* 6*d.* per ton, against 1820 tons for 27,408*l.* 18*s.* 4*d.*, or 15*l.* 1*s.* 2*d.* per ton in the previous 12 months. The quantity and price of ore sold being thus less, your directors were able to divide only 9000*l.*, against 12,000*l.* in the previous year. Your directors regret that they have not yet had the means of declaring a dividend in the current year, but from the prospects of the mine they trust, with the manager, that the former samplings of 150 tons per month will soon be resumed, from which he hopes regular dividends will be made. Your directors have received several notices of motion for the ordinary and extraordinary meeting called for to day. Among these is one for holding all the annual meetings at the mine. On this point they would remark that the e are 380 shareholders in the company, and of these 77 reside in Shropshire and at Wolverhampton and neighbourhood, holding about one-fourth of the shares. To the remaining 300 shareholders, holding the other three-fourths of the shares, London would be a more convenient meeting place, and your directors recommend that the annual meetings be held alternately at the mine and in London.

Notices have also been received that it is intended to propose that the directors be increased from the present number of four to seven, being the maximum number allowed by the Articles; and there are six candidates for these additional seats at the board, in case it shall be decided to make such elections. The candidates are: Mr. William Cooper, of Wolverhampton, holding 550 shares; Mr Edward Dethick Shaw, of Wolverhampton, holding 300 shares; Mr. Thomas Deakin Greensill, of Wolverhampton, holding 150 shares; Mr. James Cremonini, of Wolverhampton, holding 220 shares; Mr. Andrew Good Brookes, of Shrewsbury, holding 100 shares; Mr. Alfred Russel Wallace, Rose Hill, Borking, holding 120 shares. Your directors recommend that if the shareholders desire to increase their number Mr. William Cooper and Mr. Edward Dethick Shaw be elected, they being the two largest shareholders proposed in the notices received. Your directors have also received several other notices of motions it is proposed to submit to the meetings to-day, but, being irregular, they cannot be entertained, and, even if passed, they could be of no binding effect.

July 3.—Watson's engine-shaft is now 192 fms. below the boat level, and 224½ fms. from surface. The pump is fixed, rods in place, shaft divided and cased, and machine kibble winding from the bottom of the mine. We have driven the 192 cross-cut south towards the lode 2 fms., and calculate to get fully into it in 6 or 7 feet further driving. No stone will be left unturned to get into the great lode this week. The 180, west of shaft, is in a lode 4 ft. wide, worth at present 2 tons per fathom. Although the lode has fallen off in value in this end the last day or two, still the indications point to our near approach to a cavity, west of which we may expect a great improvement in the value of the lode. Supposing the dip of the ore from the 142 downwards to be uniform, the said 180 end is west to where the great run of ore seen above should come in, and the present end being very wet is fair evidence that our calculations as to the west bunch are about to be verified.

The winze, 8½ fms. behind the said end, is down 4½ fms.: the lode throughout is worth 4 tons per fathom. The 180 east, now over 15 fms. from shaft, continues to go forward in a lode 6 to 7 ft wide, carrying two ore courses, the hanging part being worth 3 tons, and the footwall portion 1 ton per fathom. This end is laying open rich ore ground for stopes in back and bottom of the level. The winze in bottom of the said level, 10 fms. east of shaft, is down 2 fms.: the lode throughout is worth quite 4 tons per fathom. Seeing that over 35 fathoms in length has now been opened in ore ground along this level, and looking at the lode in bottom of the winze east, and of that west of shaft, I do think we may look to the cutting of the lode in the 192 with considerable expectation The stope in back of the 192, east of shaft, is worth 3 tons per fathom. The stope in said level, east of No. 1 winze, is worth 2 tons per fathom. The stope west of winze is worth 2 tons per fathom. The stope in same level, west of No. 2 winze, is worth 3 tons per fathom. No. 2 stope, west of ditto, is worth 2 tons per fathom. The 167, west of shaft, is through the twitch, and the lode is gradually improving as the end advances. I value the end to-day at 1 ton per fathom, but, from the splendid leadstuff just blasted out, we may reckon on an early improvement in the lode. There is no change of note in the 167, east of shaft, for the last week or two, and it is at present a difficult question to decide whether the run of ore now in the 180 is still in front of the 167 or standing by the side of that drivage. We must explore the ground in a miner-like way to prove the points. The winze below the 152, east of shaft, is now deep enough for the purpose for which it was started—to enable us to drive west behind the south side of Watson's shaft to get to a run of ore worth 2 to 3 tons per fathom, ground that could not be worked direct from the shaft without risk to the pumps, and hindrance to the dispatch of stuff through the regular outlet to surface. I may say here that said run of ore ground appears to be a continuation of the bunch now to be seen in the 180 east. The rise in the 130, west of shaft, on south part of the lode, is worth 2 tons per fathom, with good ore in each end. The stope in said level west of shaft, but east of rise, is worth 1 ton per fathom. The 120 west towards said rise is yielding good stones of ore, but the end is not yet far enough to catch the main bunch of ore. The winze below the 110 west of shaft, on south lode, is worth 2 tons per fathom.

The 92 cross-cut, north-west towards old mine, is 2½ ft. into what appears to be a great lode, composed of carbonate of lime and good stones of lead ore; the value improves as the cross cut advances. This is evidently one of the great lodes, if not the great lode, of the old mine, and our intention is to cut it through to the full width, and then go east on its course to the great cavity and ore ground known to exist in the bottom of the 74, about 15 fathoms east of the old engine-shaft. It is impossible at present to calculate the exact dip of the cavity and run of ore ground, but 10 fathoms east of the present 92 cross-cut is likely to be sufficient to meet with the object in view.

We feel persuaded that when this part of the old mine is properly laid open by the said 92 an important addition to the resources of the mine will be the result. The last annual report made special reference to this point, and it was hoped that we should long ago have been able to go down in the cavity and work the ore ground below the 74, and thus add to the returns of the mine. We have cleared out the level, and entered upon the work, but were soon driven out by a great influx of water, the result of heavy rains, which, as you know, lasted four months, and nothing but a steam-engine for pumping would have brought us out of the difficulty: This much by way of explanation. The stope in the 80 south of shaft is worth 25 cwts. per fathom. In the 42, east of old engine-shaft in the old mine, we are cross-cutting south towards four side lodes known to exist there, and upon which important discoveries may be made. We have ample pumping and winding power, and it is our intention to explore the mine lengthways and sideways to a greater extent than has ever been done before.

Ground sunk, driven, and stoped from February, 1870, to May 1877, as follows:—Sinking shafts, 192 fms. 2 ft. 10 in.; winzes, 150 fms. 5 ft.; levels, 686 fms. 1 ft. stopes, 2650 fms. 5 ft. 2 in.: total fathoms, 3680 fms. 2 ft..

Total sales to May, 1877, 10,990 tons 12 cwts. 0 qrs., realising 154,985*l.* 19*s.* Profits made and paid to date of present balance-sheet, 58,20-*l.* The mine is in good working order, and when the lode is cut into and explored at the 192 from shaft west to winze we shall resume our usual sampling of 150 tons a month, and I trust that from that time forward regular dividends will be the rule and not the exception.—ARTHUR WATERS.

One of your directors—Mr. Peter Watson—goes out of office at this meeting, and offers himself for re election, as do the auditors, Messrs. Brandt, Stansfield and Co., public accountants.

Messrs. Cooper, Shaw, and Cremonini were added to the direction, and it was arranged that the annual meeting should be held alternately on the mine and in London. A very satisfactory supplemental report from Capt. Waters will appear, with a full account of the proceedings, in next week's Journal.

WEST TANKERVILLE MINING COMPANY.

The annual meeting of shareholders was held on the mine, on Thursday (Mr. J. J. PYNE in the chair), when the following report of the directors, together with the accounts and Capt. Waters' report, were adopted:—

Your directors have circulated the balance-sheet and managers's report, which has given you the opportunity of learning learning the results of the past year, and the prospects of the mine. You will observe that for the 12 months there have been sold 385 tons of lead ore ore for 5728*l.*, or an average of 14*l.* 17*s.* 6*d.* per ton, and 110 tons of blende for 526*l.*, or 4*l.* 15*s.* 7*d.* per ton, against only 180 tons of lead ore for 2771*l.*, or 15*l.* 7*s.* 10*d.* per ton, and 60 tons of blende for 243*l.*, or 4*l.* 3*s.* per ton, in the previous year. After charging every expense at the mine and in London, the loss on the working for the year is 168*l.* 6*s.* Your directors hope to see a good balance on the other side for the current year. During some months of the past winter the long and unprecedented wet weather caused the suspension of the shaft for a considerable time, and has delayed the laying open of the 86. You have already been informed by circular of the failure of the Burry Port Smelting Company, of which this company is a creditor for 1186*l.* 13*s.* 3*d.* for ore sold. Your directors have not taken credit for any of this amount in the accounts, and they fear that the sum likely to be recovered will be small. But for this unfortunate and unavoidable loss the credit balance would have been more satisfactory. Mr. Pyne, one of the directors, goes out of office by rotation, and offers himself for re-election, as does the auditor.

July 3.—The 86 *fm.* level is going south from boundary shaft on the course of a strong lode, composed of spar, with stones of lead ore and blende of a very promising character. We are only carrying a portion of the vein at present, but shall cut through to the hanging-wall as the end goes forward. I would remark here that the indications in the present bottom are more cheering than anything seen adjoining the shaft at the 75, and I doubt whether the latter drivage is on the same division of lode as that in the 86. This matter will be cleared up in due course. The 75 is driven south of the shaft altogether 32 fathoms, the end being 2 fathoms beyond the winze. In the present forebreast the lode is in two divisions, the footwall part being 2 ft. wide, of stones of ore, and the hanging part 3 ft. wide, worth 1½ to 2 tons per fathom. As the end goes forward it is expected that the said parts of the vein will unite, when a more valuable run of ore will be the result. The principal deposits of ore worked by the old men, and subsequently by the company, from the 20 down to the 63 fm. level, are (calculating the dip) all south of the present 75 end, hence this level is only just entering the productive ground in the mine. The stope in the back of the said level, north of the winze, by six men, at 5*l.* per fathom; the lode is worth 1½ ton per fathom. A new stope south of the winze, to follow the 75 end, by six men, at 5*l.* per fathom; present value 1½ ton per fathom. The 63 fathom level is driven south of shaft 48 fathoms, most of the distance being through productive ground. The bulk of our returns have for some time come from the stopes above this drivage, and there is a very good run of ore to be seen along the bottom of the level, which will be laid open by the 75 fm. level end, as before mentioned. The 63 is now being driven eastward to intersect the big spar, or No. 2 lode (*i.e.*, the east lode of Roman Gravels Mine); this strong lode is, we think, most likely to become productive in depth. No. 1 stope, in back of the 63 south by six men, at 4*l.* 4*s.* per fathom; worth 1 ton per fathom No. 2 stope by four men, at 4*l.* per fathom; worth 1 ton per fathom. No. 3 stope by four men, at 5*l.* per fathom; worth 1 ton per fathom. No. 4 stope by two men, at 4*l.* per fathom; also worth 1 ton per fathom. The stope in back of the 50 south by two men, at 4*l.* per fathom; worth 1 ton per fathom.

Ground sunk, driven, and stoped from the commencement as follows:—Sinking shaft, 164 fms. 5 ft. 11 in.; sinking winzes, 108 fms. 0 ft. 6 in.; driving levels, 530 fms. 5 ft. 1 in.; stopes, 918 fms. 2 ft. 5 in: total, 1720 fms. 1 ft. 11 in.

Sales of lead ore and blende to end of May, 1877:—Lead ore, 956 tons 4 cwts., realising 14,202*l.* 3*s.* 9*d.*; blende, 635 tons, realising 3184*l.* 15*s.*: total, 17,386*l.* 18*s.* 9*d.* To keep up present rate of returns will depend on the opening out of the lode beyond the present 75 end south of shaft, but the prospects in sight are favourable in this respect. To increase the returns will depend on our finding a run of ore ground from shaft along the 86, south to the corresponding ground now in the 75 forebreast. The 75 from shaft south to winze, a distance of 30 fms., is on the footwall lode, which is of little value. The 80 will be driven on the hanging wall course, which we hope (and have reason to hope) will be productive ground.—ARTHUR WATERS.

The retiring director and auditor having been re-elected, the proceedings, of which a full report will appear in next week's Journal, terminated with the usual compliments.

MELYNDWR LEAD MINING COMPANY.

A meeting of shareholders was held at the offices of the company, Change-alley, on Tuesday,—Capt. J. WALROND CLARKE in the chair.

The CHAIRMAN said he had really no remarks to make beyond those contained in the directors' report. Mr. Brookes wished to make a statement, but before he did so he would read Capt. Kitto's report.

The CHAIRMAN went on to say it was evident that additional funds must be had, and Mr. Brookes would probably tell them the best means by which they might obtain them, but before calling upon Mr. Brookes he would ask Mr. Kitto to address them. He would simply add that the directors had done everything in their power with the money that they had had to deal with, and did not stop working the mine until they found it was actually necessary, and until the engineer advised them only to work that part which was paying at the time.

Mr. KITTO: I have little or nothing to add to what I have written. I am here more for the purpose of answering enquiries than anything else. The development of the mine has proceeded regularly, and a great deal of work has been done for the amount of money actually spent, but, as I stated in my report, the prospects when we commenced fully justified us in expecting better results. We had good bunches of ore in the adit, and they held down to the 14, but were not so good there, and very little of them was seen at the 26, where the ore was not in sufficient quantities to pay. Below that level there has been little or nothing done, and I do not feel justified in recommending the expenditure of another penny on that part of the property, but, as I have stated, there are other lodes, and some of the shareholders might ask us why these other lodes have not been previously developed. My answer is that we had funds for developing one, but not the whole, and if we began, and spent a little here and there, we should not have developed one or another, and been even in a worse position than we are at present. We have, however, gone so far on one lode as to satisfy us that it is useless spending any more money upon it, and the others remain in much the same position as they were in when we commenced. One of the lodes that runs through the property is known to be the old Goginan lode, which has been immensely productive in the adjoining sett. If we were going to recommence operations on the property now, no doubt we should fix upon the Goginan lode, but the mine had been worked down to the 14 fm. level on the lode on which we have continued our operations. It was for that reason, and because of the prospects presented at that depth, that we resumed and carried on work at that point. No workings have been made upon the Goginan lode in our sett, and little or nothing on the south lode, to which I more particularly refer, except what we have done lately. There is every reason, so far as one can judge, to expect satisfactory results, provided this and the other lodes are developed further to the south.

The CHAIRMAN: When you speak of 2000*l.* or 3000*l.* you have, I presume, considered what you think will be necessary to make this trial?—Mr. KITTO: We should have to sink a fresh shaft nearer to the south lode—that is, to the lode we have been working upon lately.

Mr. BEDFORD: Could you develope the Goginan lode with your present machinery?—Mr. KITTO: Yes; but we should require a new shaft, the old shaft being sunk on the lode we are working.

Mr. BLAND: Did you proceed upon the lode you propose to abandon upon your own judgment or upon the judgment of other people?—Mr. KITTO: Upon both; and I thoroughly believed that they believed what they told me. They said it would strike the Cwm Erfin lode away to the north, through the big mountains, but the lodes must have taken a twist. A very small point in two or three miles would throw us out a considerable distance.

In reply to Mr. BLAND, Mr. KITTO said there were no surface indications whatever of this lode.

Mr. BLAND: Then you went to work upon voluntary information?—Mr. KITTO. Yes, so far as the north cross-cut is concerned.

Mr. BLAND: You had no means of judging for yourself?—Mr. KITTO: No other means than I tell you of. Taking the mean bearings, the lode would have been to the north of our cross-cut, provided it did not twist in the course of the mountains, which it was not unlikely to do.

Mr. BEDFORD: What did you find in the shallow adit level, on the south lode, to justify you in the recommendations in your report?—Mr. KITTO: A large lode, such as is peculiar to the district. It is too shallow to expect to find ore in any paying quantities. We have found a little ore, but not very much. Still, it is such as will justify us in expecting something more deeper down.

In reply to Mr. BEDFORD, Mr. KITTO said the depth from the surface was only 6 or 7 fathoms.

Mr. DAVEY: What is the width of the lode?—Mr. KITTO: From 4 to 15 ft.

Mr. BEDFORD: How far is Goginan lode from the south lode, upon which you have been making some operations?—Mr. KITTO: About 100 fms.

The CHAIRMAN then introduced Mr. Brookes to the meeting as a large shareholder desirous of making a statement as to the best course in his judgment of raising fresh capital.

Mr. BROOKES said: I should propose that the mine have a new name, with a capital of 10,000*l.*, in 10,000 shares of 1*l.* each. The present shareholders in the Melyndwr to have one share for every two shares they now hold (called A shares), numbering about 4325 (half of 8650), free. The present shareholders in the Melyndwr to have the option of redeeming the other shares (called B shares) at 7*s.* 6*d.* each. The holders of an odd number of shares will only receive the smaller half of their shares free, but will be able to redeem the odd share at half price; those shares are called C shares. There will thus be left 1350 shares (called D shares), which can be disposed of at 1*l.* each to the public, raising 1350*l.* The object would be to sink a shaft in the valley, or somewhere near the south lode, and when a reasonable depth is attained to drive north to the south lode, and south to the lodes on the other side of the valley. The money that would be available for the purpose would be, first, 1624*l.* 17*s.* 6*d.* from B shares, then 1330*l.* from C shares, thus the whole available money would be 2971*l.* 17*s.* 6*d.* If directors would work for nothing, and mining engineer and secretary only charge expenses out of pocket, it might be worked for very little expense, and all the money spent really and truly on the mine until such time as it could afford to remunerate those who had worked for it out of profits. The time allowed to take up shares be an agreed number of weeks, and if then 1000*l.* at least be not secured liquidate, but if 1000*l.* be got, and be successful, the remaining B shares be sold as well as D at 1*l.* each; offered first to those who redeem their shares.

Mr. KERLY (solicitor to the company) said he fully appreciated Mr. Brookes's desire to give some interest in the reconstructed concern to the old shareholders, but he could not from a legal point of view recommend the scheme to the adoption of the shareholders. He did not believe that the public would take up the 1350 shares (even if the scheme were adopted), because the inducement was insufficient.—Mr. BROOKES admitted that there was no inducement at present until the lode was developed.

Mr. DAVEY asked if they had power in this company to issue shares at a discount?—Mr. KERLY said that it was very doubtful whether, as against creditors, shares could be issued at a discount. He should not like to be a shareholder at a discount in case of proceedings being taken by a hostile creditor.

Mr. KITTO: I would say that none of our mines had anything to fear from creditors. I do not think we owe 100*l.* in all the mines we have put together. No unsuccessful mine that I may manage will wind up and find its debts unpaid. If we get 3,000*l.* I should recommend you to go on.

Mr. BLAND: How long would it take to determine the result?—Mr. KITTO: It would be no use cross-cutting until we are down 25 fms. It would certainly take eight months before we could prove the lode. I should sink nearer one lode than the other, and develope one more than the other at first.

Mr. DAVEY: Which lode would you give the chose to?—Mr. KITTO: The present south lode.

Mr. BOWMAN: I am quite willing to fall in with any plan. I think you might issue part of the 2350 shares as preference shares, or I should be satisfied to follow Mr. Brookes' plan, in either of which case I would take my proportion. The great reason of our failing has been not issuing the whole of our capital. We should (had all the capital been issued) have had 7050*l.* more in hand than we have, and that is the money we now want. When we consider the large undertaking we had in Melyndwr Valley I say we were crippled at the onset. Those who had the active management of the mine were not aware until very recently that the whole of the shares were not issued. I was surprised myself to find we were so near the end of our capital. There are several lodes very productive to the east and north-east, but we have not been able to do justice to the property with the limited means we have had. Where there is a batch of lodes it is my experience that in a certain parallel they have been unproductive but it is quite reasonable to expect that we shall find those parallel lodes south more productive than the north ones. It was so in Cwm Erfin. The whole mountain is twisted. A sort of intrusive rock appears to have shifted it, and the old workers were cut off entirely by it, and this has pushed the stratification very much to the south. I do not think anyone can be blamed for the result in this mine so far. The whole of the work has been carried out in a most economical manner. I have been there many times, and can bear testimony to the fact that not a penny has been spent in the development of the mine so far as it has gone. The machinery has been simple and effective, and the mine has never stopped on account of a breakdown. The men have worked for reasonable wages, and comparatively but a small amount has been spent. There is a mine near us that with a single shaft has yielded a profit of 14,000*l.* a year, and we know that other mines in our vicinity have been largely productive. We have every reason to expect the same good fortune.

Mr. BEDFORD confirmed what Mr. Bowman had said, and remarked that in the Cwm Erfin Mine the north lodes did not become poor, and they found the ore again in the parallel lodes to the south.

Mr. KERLY then moved, "That the profits available for dividend be appropriated as follows:—Half the profits to the holders of the 8650 shares which had been allotted, and the other half to the holders of the 2350 shares remaining to be allotted—the unallotted shares to be offered, in the first instance, to the present shareholders *pro rata*; if less than 1000 unallotted shares are subscribed no allotment to be made." This would take the form of an additional clause to the Articles of Association.

After a desultory discussion this resolution was adopted, and the proceedings closed with a vote of thanks to the Chairman.

[For remainder of Meetings see to-day's Journal.]

GRAVEL MINING.

AN IMPORTANT DEVELOPMENT IN NEVADA COUNTY.

We have (says the Nevada Transcript) during the last four years written much concerning the section of country known as the "Ridge," located in Nevada County, between the Middle and South Yuba rivers. It consists of a mountainous belt of country, intersected by frequent canyons and gorges, and running in a southerly direction from the summit of the Sierra Nevada Mountains. On it, from Eureka South to French Corrall, mining has been successfully prosecuted at different points along the line for the last 20 years. The most important gravel mines of the State are located on that Ridge—among the number are the Milton and Sweetland Creek, the American, Badger Hill, the Eureka Lake Company's Consolidated, North Bloomfield, the Blue Banks, and others of importance, all of which are on an ancient river channel which traverses the Ridge from Snow Point to French Carroll, a distance of somewhere in the neighbourhood of 20 miles. The principal mines are surrounded by claims having less development upon them, but the ground is known to be equally as rich as that owned by the larger companies. The developments on the line of the channel have been made at points remote from each other, and where the channel cropped out on the surface and revealed its locality. Intervening between the points worked a heavy deposit of earth, and in some places lava, is found above the channel, and its course between such points has, therefore, been a subject of conjecture. The theory has for a long time prevailed that the channel which runs from Laporte, Plumas County, *via* Forest City and other points in Sierra County, is that found on the San Juan Ridge, in Nevada County, and that it crosses the Middle Yuba river, and enters Nevada County at Snow Point, and follows the Ridge down to French Corrall; but just where it runs between Snow Point and North Bloomfield has been a mystery. Between these points the surface of the Ridge is composed of a deep lava formation, which prevents the channel from cropping out at any point, except at Moore's, Orleans, and Woolsey's Flats. These locations are not on the bridge proper, but are benches several hundred feet lower than the main Ridge.

Some years ago, while engaged in mining in the State of Nevada, S. B. Hunt, a former resident of Moore's Flat, conceived the idea that the mines on those flats or benches had been fed, or rather that the gravel found there was simply an overwash from the main channel under the high Ridge above. He also came to the conclusion that the same amount of money expended in testing his theory there would eventually result more profitably than would the same amount expended in Silver State mining enterprises. He, therefore, in 1873, left Nevada and went to San Francisco; after a long time he succeeded in organising a company, and in 1875 had it incorporated. The capital stock was divided into 60,000 shares, of the par value of $30 each. W. B. Cluff is the president, J. M. Buffington secretary, and Mr. Hunt superintendent. After a limited amount of capital was secured, operations were commenced in October, 1875, in sinking a shaft, and the erection of hoisting works, carpenter and blacksmith shops were started at the same time. The point selected on which to sink a shaft was on a bench close up to the prospected Riege above. The locality was in a heavy belt of timber, and everything had to be cleared off, and roads cut to enable the works to be erected. Practical men who knew the country there thought the enterprise a very doubtful one, and that the projector was visionary in the extreme. The encouragement received consisted generally of undisguised sneers—no one believing that the channel run near the point selected. However, Mr. Hunt pushed ahead. The location of the Ridge in the rear of the shaft convinced him that the shaft would eventually strike a heavy body of water, so a tunnel was started in November of last year, and the facts soon warranted the correctness of his conclusions. At 110 ft in depth the 8-in. pump was found unable to cope with the water, and sinking had to be stopped. The tunnel, in order to reach a point beneath the shaft, will have to be run 1728 ft. Over 200 ft of it had been completed when sinking stopped. By putting on three shifts of men a distance of 8.5 ft. has since been run, mostly through a rock that had to be blasted to be taken out. When that point was reached—which occurred on May 26—the workmen struck through the rim rock into gravel, which there is but little doubt is the main channel, for which the superintendent has all along been running. As soon as the news spread the town was wild with excitement; the workmen suspended work, and the event was celebrated in true miner's fashion.

The development proves that an old river channel traverses the Ridge under the lava formation, and that from Snow Point to Bloomfield, a distance of nine miles, it lies untouched in all its native richness. It proves, as Mr. Hunt anticipated, that Orleans and Moore's Flat gravel were only outwashes from the main channel, and their richness indicates what the main channel contains. The tunnel will be pushed ahead until it reaches a point under the perpendicular shaft, which will be about 223 ft. below the surface. It is expected the bottom of the channel lies about 170 ft. below that, or that the depcsit from the surface to the bottom is 393 ft. The ground will be drifted out, or that portion of it near the bed-rock. Experience has shown that a majority of the gold in the channels in that section is within 4 ft. of the bed-rock. The deposit drifted out will be raised to the surface and placed in a dump-house which will hold from 4000 to 5000 tons. A sluice will be run through the centre, and when the house is filled it will be washed through a sluice 1000 ft. or more in length. It is expected one day's washing will run off all the dirt raised during a week's work, and that 500 in. of water will do it. The company owns 214 acres of ground, all secured by good title. As soon as well opened it is expected 200 men will be employed in drifting, and that they can take out about 600 tons of the gravel per day. It is believed that within the grounds of the company there is the junction of two channels, or that the Woolsey Flat channel is the one struck, and that unites with the main channel further back in the Ridge. The amount expended by the company in building tunnels, shafts, and other outlays, up to date, is but $30,000. We regard it as the most economical outlay ever made, and from it there would flow greater results than was ever realised from a similar expenditure. It proves that a vast extent of the richest possible mining ground in our county has hitherto been untouched; that there is a field for the profitable investment of millions of dollars; that thousands of men can, in the near future, find remunerative and continuous labour in that territory, and that gold

exists there in quantities past computation. The rim rock of this channel can be traced from North Bloomfield *via* Snow Tent and Forest City to Laporte, in Plumas County. Hunt's discovery warrants early openings all along the line where work has not before been prosecuted. We feel that too much credit cannot be awarded to the gentleman who has persevered under all manner of discouraging circumstances, until he has demonstrated to the world what the capabilities of Nevada County are as a field for mining.

FOREIGN MINING AND METALLURGY.

The protectionist section of the French iron trade has been a good deal occupied with the consideration of the Treaties of Commerce question. A maintenance of duties for 10 years, and a suppression of the system of temporary admissions, such have been the principal objects of the complaints of these industrials. As regards the current aspect of the French iron trade, the feeling appears to be one of rather increased contentment as the dead season is considered to be passing away. In the Nord the price of iron remains between 7*l.* and 7*l.* 4s. per ton; at Paris scarcely any business has been done below 7*l.* 4s. per ton. A commercial convention between France and Italy has been signed, and will be submitted to the Chambers before December. The duty imposed on iron entering France has been fixed at 1*l.* 4s. per ton. Raw pig will be free from all duty. Upon Italian iron entering France the duties proposed to be imposed are 16s. per ton for rough pig, 2*l.* 8s. per ton for iron and rails, and 3*l.* per ton for plates. As regards the Treaty of Commerce with England, a postponement of negociations appears to be more than probable.

The closing for a few weeks of several of the Belgian canals has given some animation to deliveries by railway, but has not really changed the aspect of the Belgian coal trade, which continues to show very little animation. Recent hot weather, alternating with several days of rain, has pushed the sugar beet crop forward; hope is not, then, lost on this head, and some increase in the demand for coal in Belgium may be witnessed in consequence. M. Jules Von Scherperzeel Thim, chief engineer of mines in the province of Liége, has just issued a report on the progress of coal mining industry in that province in 1876. The past year appears to have been rather a disastrous one for Liége coalworkers, the already limited profits realised in 1875 having been much reduced in 1876. There were 92 centres of extraction in activity in 1875; in 1876 the corresponding total was reduced to 85. The production of 1876 was 3,368,000 tons, or 184,000 tons less than the corresponding production for 1875. The sale price also declined to 10s. 6d. per ton in 1876, or 1s. per ton below the corresponding sale price for 1875. The total profits realised, which were 128,600*l.* in 1875, declined in 1876 to 40,480*l.* This profit was a little less than the corresponding profit realised annually in 1861, 1862, and 1863, when the annual average extraction was only 1,920,000 tons. The adverse results attending the working operations of 1876 were rendered all the more disheartening by the fact that during the past 12 years the coalworkers of the province have expended 2,440,000*l.* in new works.

There is scarcely a single French coal mining district in which trade can at present be said to be active. The hopes conceived as to the future of the trade have been thus far disappointed; the production is only sustained by a feeble and irregular current of orders. In the Nord and Pas-de-Calais coalowners are endeavouring to get rid of the stocks which have accumulated upon their hands at the best possible prices which can be obtained; the stocks held are, it may be added, still formidable. The French iron trade, which has some small orders on hand, is at present the chief and almost the only customer for Belgian coal. In the basin of the Loire the situation is, perhaps, a little more hopeful as regards the future, as orders, which it is believed will be ultimately placed, have been only partially given out at present.

It is stated that the Administration of the Belgian State Railways will shortly let contracts for 1500 tons of railway sleepers. The laying of some similar sleepers contracted for in November by the Providence Forges Company has been commenced, and is rapidly proceeding. The Belgian Minister of Public Works has officially intimated that the use of steel rails upon the Belgian State Railways has been attended with satisfactory results, and it is considered probable that the administration of the State network will in future only admit steel rails in the construction or maintenance of its lines. The Belgian rolling-mills are rather indifferently supplied with orders. The same may be said of the Belgian mechanical establishments, which are directing their attention to a description of work which they have never previously undertaken. Thus the Meuse Company, which has hitherto devoted itself specially to the construction of machinery, has undertaken the construction of two dredgers, as well as a screw steamer, for the Liége Steam Navigation Company. This steamer is to be fitted with engines of 50-horse power, and is to attain a contract speed of 11¼ miles per hour. The production of the blast-furnaces of the province of Liége in 1876 was 7900 tons less than the corresponding production for 1875. Notwithstanding this curtailment in the production the average selling price of the pig made in 1876 was 5s. per ton less than in 1875. The quantity of iron of every description delivered to commerce in the province of Liége in 1876 was 113,000 tons, or 12,000 tons less than the corresponding deliveries in 1875. The average selling price at the works in 1876 was, however, 12¾ per cent. less than the corresponding selling price in 1875, although quotations were terribly low in that year. The production of steel in the province of Liége increased in 1876 to 72,500 tons, as compared with 47,200 tons in 1875. The average selling price at the works was, however, only 8*l.* 12s. per ton in 1876, as compared with 12*l.* in 1875.

ALMADA AND TIRITO CONSOLIDATED SILVER MINING COMPANY (LIMITED).

MINA GRANDE.

Capt. Clemo, May 24: The drive north on the west branch has ran out of ore and into a ball of felspar similar to those we so often meet with on this lode below the tunnel level. We have now began to drive south on this same branch; there the ore is 8 ft. wide, and very solid.

May 31: West Branch: The drive south continues to look well. We have now driven 20 ft. on this branch, which is 6 ft. wide, of good black ore.

June 7: West Branch: The drive south has no change to notice.—**Old Lode:** We have now began to sink a winze below the 12 in the lode; this winze is in solid ore. We have also began to drive the 24 north.

Frank W. Breach, May 31: The new western vein in Mina Grande still holds to the south, and looks well, with veins of good yellow ore through it.

June 7: In the Mina Grande the new west branch holds on very well to the south (7 ft. wide), and will yield 12 tons to the cubic fathom of furnace ore. In the 24 we have commenced cross-cutting west before driving to the north for the purpose of getting into easier ground, which already is beginning to show itself.

DIOS PADRE.

Capt. Clemo, May 24: The ground cutting to form the rise under the shaft is now nearly completed; we shall commence to rise in a few days. The rise on boundary cross-cut has no change to report; we have now stopped it for the time, and began a winze in the same place. In the winze we find some good balls of green ore, pitanque, and lead.

May 31: We have now began to rise from the back of the tunnel end towards the shaft. The winze sinking on the boundary cross-cut is not looking so well as it did, so we are going to try the rise again.

June 7: The rise commenced in the tunnel end for communicating with the shaft has been stopped. The works on boundary are stopped; to continue them it would be necessary to work the air machine entirely on their account This place is poor.

Frank W. Breach, May 24: The exploration in the Dios Padre cross-cut continues to pay expenses, and rather improves as we sink. We gave up rising in favour of sinking, as presenting more promise of reaching ore quickly. The Dios Padre shaft is squared out in the level, and we commence rising to morrow.

TIRITO, NEW EAST LODE, AND PROVIDENCIA.

Capt. Clemo, May 24: Tirito: The stope in front of engine shaft over the tunnel level is turning out a fair quantity of ore; here we have two branches—one 6 ft. and the other 4 ft. wide. The stope from rise in the back of the 5⁴ produces very fairly. The cross-cut in the 54 has no change to notice. The engine-shaft sinking below the 54 continues the same; the ground sunk last week was 3 ft. 7 in. The shaft is now 9 ft. 4 in. below the 54. The lode in the stope in the new east lode, 5 fms. below the tunnel level, has failed, so we have stopped working it.—Providencia: We have here began to work on a branch of green ore 9 in. wide, that we have discovered in the side of the old tunnel level a little to the north of the Providencia boundary line.

May 31: Tirito: The stope in front of the engine-shaft over tunnel level is still looking well. The stope from rise in back of the 20 has no change to report; the lode in this place is now 8 ft. wide. The ore occurs in several small branches in the lode. The cross-cut in the 54 has now been driven 25 ft. across the lode, and met with what appears to be the western ground, but without meeting a western wall. We have now commenced to drive north from the end of the cross-cut. In the drift we have a branch of quartz, with some spot of ore through it. The engine-shaft sinking below the 54 has no change to notice; the ground sunk last week was 2 ft. 8 in. The shaft is now 12 ft. below the 54.—Providencia: The lode in this place is very much improved this week; our works in this place are about 70 ft. long and 8 ft. wide. The stope has now about 2 ft. of good green ore.

June 7: Tirito: The stope in front of engine-shaft has no change to notice. The ore in the stope from rise on the back of the 20 is steadily improving in quantity and quality. The 54 driving north looks much more promising than it did last week. The engine-shaft sinking below the 54 continues the same; the ground sunk last week was 3 ft. The shaft is now 15 ft. below the 54.—Providencia: The lode in this place continues to improve in quantity; the quality is very fair.

Frank W. Breach, May 24: Tirito: At the 54 cross-cut I am sorry not to be able to report having cut ore, especially as I am in daily expectation of hearing that the country ground has been met with. All we have in the face of the cross-cut is spots of green ore. The engine-shaft is going down very well in good hard ground, requiring no timber, but still sufficiently easy to go 3 ft. per week. The orey ground in the Providencia that we are working produces green and red ore for the furnace. It is paying expenses, but I have not much hope of its leading to anything of importance.

May 31: Tirito: You will notice by Capt. Clemo's letter that we have cross-cut the lode at the 54 without meeting with more than what may be termed very promising ground. Notwithstanding the ore in the 42 winze, there is really not much cause for feeling disappointed. It must be remembered that at the 42 we see the last of one slide, and that at the 54, although nothing has been seen of the south slide, we know we must be either close to it, or that it also has disappeared, and in either case we have no right to expect ore so close. We are now driving north in very favourable spar. We should also drive south, but that, not having a penthouse in the shaft, all the waste in driving has to be thrown into the shaft to be hauled, and the ground from two ends would cause too much delay in sinking. As soon as the shaft is down 18 or 20 ft.—say in two weeks, when a penthouse may be safe from shots—one will be at once fixed, and the south level commenced. The ore we are stoping over the tunnel in the Providencia has certainly improved, and now yields a fair quantity. The ground is easily worked, and being immediately over the tunnel is very cheaply handled.

June 7: The north end in the 54 you will see by Capt. Clemo's letter is improving. When I saw it on Saturday last it looked no more than kindly ground. Our supply of green ore is keeping up beyond expectations, owing to the Providencia turning out ore, and improving over the tunnel back, but it is not a place we can rely on.

FOREIGN MINES.

ST. JOHN DEL REY MINING COMPANY (Limited).—Advices received June 30, 1877, ex Mondego (s.), dated Morro Velho, June 2:—

GOLD EXTRACTED TO DATE.—The produce extracted during the second division of May, being a period of 12 days, amounts to 14,285·0 oits. It has been derived as follows:—

	Oits.		Tons.	Oits. per ton.
General mineral	5,929·5	from	973 =	6·094
Mineral roughly freed from killas	6,700·0	,,	655 =	10·288
Poor mineral treated separately	505·5	,,	166 =	3·045
	13,135·0	,,	1794 =	7·321
Re-treatment	902·0	,,	— =	·502
Praia stamps produce	258·0	,,	— =	·145
Total	14,295·0	,,	1794 =	7·968
Equal to	1647·9809 ozs. troy.			

The foregoing produce shows about the same standard yield of gold per ton as was extracted during the first division, but the daily produce is less, arising from less mineral having been treated by the stamps. It may be seen the mineral roughly freed from killas has given in the second division 10·228 oits., and the poorer mineral has yielded less by about 1·260 oits. per ton. The produce may be considered rather under what might have been expected from the mineral received.

Advices received July 16, 1877, ex Elbe, dated Morro Velho, June 18:—

GENERAL OPERATIONS.—The operations of the company have been carried on without interruption both in the mine and at surface. The water supply has been more than sufficient for our requirements. The delivery of timber, owing to special premiums being offered for logs of large dimensions, is beyond the average of previous months. Every effort is being made for the purpose of forming a reserve stock, to meet the requirements during the next wet season. There has been a slight increase in the attendance of native borers, owing to the payment of wages being now made fortnightly. There is every reason to believe that this step when generally known will attract a still greater number.

PRODUCE FOR THE MONTH OF MAY.—The produce extracted during the month of May has amounted to 39,235·3 oits., or 4523·1919 ozs. troy. It has been derived as follows:—

	Oits.		Tons.	Oits. per ton.
From general mineral	16,638·5	from	2693 =	6·178
Mineral free from killas	18,183·5	,,	1806 =	10·068
Cotesworth mineral treated separately	1,311·4	,,	383 =	3·424
	26,133·4	,,	4882 =	7·401
Re-treatment	2,346·7	,,	— =	·484
Praia	735·2	,,	— =	·151
Total	39,235·3	,,	4882 =	8·036

The month's return shows an increase of 3236·5 oits. compared to that for April. The general body of mineral treated shows a slight improvement in the produce per ton. April, 7·1 oits.; May, 8·0. The improved quality of the mineral is due to the larger area of available stoping surface in the western stopes from sump, the greater part raised from those sections being mineral of high grade.

COST AND PROFIT.

The produce for May being	39,235·3 oits.		
Deduct loss melting into bars	200·5 ,,		
	39,034·8, at 7s. 9d. per oit. =	£15,125	19 9
Cost		7,884	16 4
Profit for the month of May		£ 7,241	3 5

The cost for the month of May is 1107*l.* higher than was incurred in April. The increase has arisen chiefly in log timber for the time, amounting to 310*l.* A new wire rope, 311*l.*, is also included. The other items of increase consist of dynamite and candea poles; a large quantity of the latter have been used in the mine to secure the left untimbered ground of past months, owing to the limited delivery of this article.

MINE DEPARTMENT.—The output of mineral for the month shows a slight increase to that raised for April:—

Amount of mineral delivered on spalling floors	7092 wagons.
Average number of natives daily	171·48
Average number of borers daily	113·81
Mineral quarried per borer daily	2·30 wagons.

SINKING.—The sump has been sunk vertically during the month 4 ft. 7 in. The lode at this point is without alteration. The width between walls measures 41 ft., with 22 ft. of solid and nearly pure mineral contents on the south wall, the remainder 19 ft. being killas and compact black quartz of a very hard nature, with thin layers of pyrites.

STOPES WEST FROM SUMP.—An improvement has taken place in section 257; there are indications at this point of an extension of the mineral-bearing part of the lode, both westerly and southerly, with a slight angle of underlie to the south. Before ascertaining the extent of this mineral body deeper stoping is necessary. The arrangements for the lowering of the B kibble below that horizon for that purpose are nearly completed.

EASTERN DRIVING ABOVE SUMP.—This level has been extended during the month 4 ft. 6 in. The lode continues contracted from the hard nature of the poor mineral body north from same, referred to in the previous paragraph on Sinking.

LODE IN SECTION 216.—The quality of the mineral stoped is in every respect satisfactory, there being but little quartz and killas in the general body. An advance level easterly under the roof has been decided upon as soon as the necessary force can be obtained. Explorations also in the western level under roof will be at once undertaken.

GOLD EXTRACTED TO DATE.—The produce extracted during the first division of June, a period of eight days, has amounted to 10,969·6 oits., or 1264·6163 ozs. troy. It has been derived as follows:—

	Oits.		Tons.	Oits. per ton.
From general mineral	4584·0	from	774 =	5·922
Mineral free from killas	5268·3	,,	576 =	9·146
Mineral treated separately	402·3	,,	82 =	4·906
	10,254·6	,,	1432 =	7·161
Re-treatment	522·2	,,	— =	·363
Praia	192·8	,,	— =	·136
Total	10,969·6	,,	1432 =	7·660

The first division refers to a period of eight days. The average yield of the general body of mineral gives 7·6 oits. per ton, that freed from killas 9·1 oits., both returns being a trifle under the average for May month.

Gold troop dispatched June 13.

Total remittance	77,009·0 oits. = 8877·8 ozs. troy.

The mine returns for the first fortnight of June month embrace a period of 13 days.

Mineral quarried and delivered on spalling floors	3380 wagons.
Daily average native labour	186·92
Daily average borers	118·76

Duty per borer, 28·64 wagons, or 2·15 wagons daily.

GENERAL REMARKS.—No notable change in size or quality in the general body of the lode. The eastern end driving still carries the line of mixed mineral with killas on the north side of lode. Sump unchanged, yielding mineral of good quality. Section 216 as previously reported. Water supply fully up to present requirements.

N.B.—The gold, as referred to above, has duly arrived.

The following telegrams have been received:—

On June 19, "Produce eight days (first division of June), 10,750 oits. Yield, 7·5 oits. per ton. General work progressing satisfactorily."

On June 25, "Yield, 7·8 oits. per ton. Profit for the month (May), 7200*l.* Cost, 1000*l.* above average."

On July 2, "Produce eleven days (second division of June), 12,750 oits. Yield, 7·3 oits. per ton. All going on well."

On July 12, "Produce for month (June), 36,000 oits. Yield, 7·1 oits. per ton."

On July 19, "Produce nine days (first division of July), 9500 oits.—3681*l.* Yield, 6·7 oits. per ton. Produce small, from work going on which interferes with working best stopes."

CHICAGO (Silver).—Telegram from the general manager in Utah: Injunction confirmed, subject termination suit, validity of patent re-affirmed.

DON PEDRO NORTH DEL REY (Gold).—Report for May: Produce from 1619·19 tons, dry weight, 4654 oits.=1977*l.* 19s. Cost, including all general expenses, also cost of labour and materials, amounting to 2474*l.* 1s. 9d., for erection of permanent pumping machinery=2297*l.* 1s. 11d. Capt. Vivian (June 18) reports—Weighed to date, 3098 oits. Telegram from Rio, dated July 9, referring to a later date than the above report, advised 7100 oits. for the month of June.

PROVIDENCIA AND NEW ROSARIO.—M. V. Cumins, June 14: Our extraction for the fortnight 50 cargas (7 tons) of white ore, worth from 11 to 12 marcs (11 to 12 guineas) per ton, 3 cargas (½ ton) of quemazones, worth about 7 marcs (7 guineas) per ton, and about 13 cargas (2 tons) of smalls, worths 5½ marcs (5½ guineas) per ton. In San Diego there is no change, the lode continuing to look much the same. The men have to sink about 2 varas more (about 5 to 6 in.) to communicate the winze with San Miguel, and as I expect them to complete the sink this week I have removed the Englishmen from the rise and placed them to drive the San Miguel south eastern cross-cut in order to discover as much of the lode as possible. The Englishmen have been working only three days in the cross-cut, and have not, therefore, had time to discover deeper into the lode. They have been simply opening the end in width and height in order to give the stone a better chance to bear, but the lode where the horse has been stripped from it promises well, and I am in great hopes of being able to give a good account of it in my next letter.

HUNTER CONSOLIDATED.—G. P. Armstrong, June 22: Crown Point Tunnel: This tunnel, 240 ft. in length, was completed on the 20th inst., so that connection is now had with the main winze 90 ft. below the tunnel from which the winze was started; this tunnel has been run by three shifts per day on the tunnel face and three shifts on drift from winze to meet tunnel; this will now afford good ventilation, and save hoisting the ore 90 ft. further. This is to be the main working tunnel, and is now laid with good T iron rails; this tunnel is also being continued on to cut Copperhead and Vulcan, the distance to the first being about 400 ft. from the winze above referred to, and about 500 ft. to Vulcan. Mr. Daggett will soon make survey, as he has an instrument for that purpose, and will make a map showing a course of veins, and manner in which they are being worked; this tunnel will cut the Vulcan shaft about 65 ft. below the bottom of 255 ft. from the surface, so all the ore both above and below this level will come out through the tunnel, and will then be only 1000 yards to furnaces.—Furnace and Mine Road: This is nearly completed from furnace to mouth of Crown Point tunnel, and will be a good road at all seasons of the year.—Water Pipe: 7800 ft. of pipe has been delivered, and the laying of pipe commenced to-morrow. The balance of pipe is at Eureka, and will be here in a few days.—Charcoal: Have made a contract for 100,000 bushels of charcoal of best Pinon pine at 22 cents on the basis of 2748 cubic inches to the bushel; this is about 5 per cent. more charcoal to the bushel than Utah standard. The charcoal to be delivered at rate of not exceeding 30,000 bushels per month. Freight is arriving quite rapidly.

I.X.L. (Gold and Silver).—Lewis Chalmers, June 25: I send you herewith foreman's report, from which you will see that we have not yet made the connection between the Buckeye adit and the O.K. shaft. Till this is made (and which I had hoped to do on Saturday) I cannot form any opinion as to the width of the lode towards the footwall. Sinking goes on with vigour. The wood for the mill contract is finished, 1000 cords.

— John Ryan, June 23: I have to report as follows:—The engine shaft is now down 39 ft. from 200 station; 6 ft. sunk this week. We had some stoppage in sinking this week, fixing the boiler lining part of shaft. Now fully started will make good headway. Said shaft is in fair blasting ground; water not very troublesome. The adit drift is now in 96 ft. from shaft to face, is in a big ledge of porphyry and ore, some of which will apparently go $16 or $18 per ton; 7 ft. of said drift driven this week; one miner only worked in said drift this week; the other two miners worked raising up from cross-cut that connects the raise from the 200 ft. level with the O K. shaft. The raise to connect the adit drift is now up 9 ft.; about 5 ft. more will make the connection with the adit, O K., and raise; the said connection will be made on Tuesday or Wednesday next; then the mine will be well ventilated and a good outlet to it. There are about 200 cords of wood now delivered at the mine still packing. Everything in and about the mine is running and working well.

PITANGUI (Gold).—Mr. Hilcke (Pari, June 14) reports that the adit had been extended 3 fms. 2 ft. during May, the rock for this distance being very hard, and had become very dry, and of a tough nature, making it spare for quarrying. The end was extended 60 fms. 4 ft. from the mouth of the adit at May 31, leaving an estimated length of 65 fms. 2 ft. to be driven before intersecting the Jacotinga. At Morro das Almas a small level had been driven 8 fms. towards the bed of Jacotinga considered worthy of exploration.

SANTA BARBARA (Gold).—Mr. Hilcke (Pari, June 14) writes—During May 1062 tons of mineral were stamped, yielding 3·454 oits. per ton, or a total of 3669 oits. of gold, which, valued at 8s. 6d. per oit., amounts to 1559*l.* as the estimated value of the produce for the month of May. The cost for the same period, which was still higher than usual, owing to the causes named in the last monthly circular, was at Exchange 24d., 1070*l.* 12s. 8d., thus leaving an estimated profit of 578*l.* 7s. 4d. for May. This produce, which shows a satisfactory increase in the yield per ton of ore as compared with April, had been obtained from the working of four of the stamping mills only, No. 3 stamps having been idle during the month. The ore raised was obtained from Nos. 3 and 4 stopes, south of No. 1 shaft, where the lode was of good productive quality. So much extra work being on hand the exploratory cross-cuts at No. 2 level had not been commenced with, but as soon as the new, or No. 2 shaft, and the new whim were completed this cross-cut would be at once begun. In the place of the old whim of No. 1 shaft, which had become very shaky and heavy for drawing, a much lighter whim had been substituted, which was working much easier than the old whim. The quantity of ore raised during the month amounted to 1259 tons, of which 217 tons were rejected as refuse stone, and 1042 tons, with 20 tons over from April treated at the stamps. Average quantity of ore raised per borer for the month, 30·3 tons.

CEDAR CREEK.—T. B. Ludlum, June 20: Since my last the continued warm weather has had a serious effect upon our water supply, reducing the quantity running in our main ditch to 700 in. I have not yet, however, commenced to draw from our upper reservoir, as I consider it to our advantage to reserve the water therein for the purpose of washing in the Baker and Star and Union. In consequence of the diminished supply I have been obliged to cease running water to our customers. In the various claims there is but little change to note. The Baker continues washing as constantly as possible. Owing to the heavy character of the boulders and hardness of the cement it is impossible to use water more than from six to nine hours per day to advantage. We are still washing on the bottom gravel on boulders loosened by the large blasts in April. We will try to get the bed rock cleaned by the 1st prox., so as to clean up on that day. We have been driving some drifts about 100 ft. back of the shaft, which are about completed, and we will try to explode a blast therein while we are off cleaning up. This blast will be a large one: it will be in solid gravel, and will extend back to the line of greatest depression in the ancient channel, and it is supposed that it will open the pit past the very hard body of cemented gravel with which we have been obliged to continue. In the Star and Union we have continued at work, and are washing off the gravel loosened by the small blast referred to in my last, and are also cleaning up some of the bottom. The Pacific claim is idle, owing to scarcity of water.

BIRDSEYE CREEK (Gold).—G. S. Powers, June 23: The blast exploded on the 15th, as mentioned in my last, was a success, and as I have got an extension of water from South Yuba I shall quite likely continue washing in Neese and West claim as late as July 25, or thereabouts. If I can succeed in clearing in the remainder of the blast exploded May 13, and one of the 15th inst., which now I hope to do, it will leave me something towards making the necessary improvements so much needed before the commencement of next water season. The bought head of water was increased on the 18th inst. from 200 to 400 in.; and the new company appear quite anxious to furnish water to the Birdseye Company, from the fact that there is no more to be made from the sale of their water than using it on their own mines.

NEW ZEALAND KAPANGA (Gold).—J. Thomas, June 2: In the 60, during the past four weeks ending the 2nd inst., the No. 6 level has been driven on the course of the lode 6 fms.; length driven south of the winze, 10 fms. For the last 4 fms. driving the lode was terribly disturbed by a horse of hard ground that forced itself through the footwall, which curved and twisted the hanging wall in a surprising manner. No gold was seen during the disturbance, but immediately after driving through and getting clear of it the lode became regular, having its usual character, producing at times fair specimens of gold quartz; it is literally full of mineral, and averages 18 in. wide. The stope above No. 6 level has been carried south of the winze 5 fms. long and 2 fms. high: the lode is from 1 to 2 ft. wide, yielding very rich stones of gold quartz and good crushing stuff. Some of the specimens are the richest I have seen. The gold is wire-like course, intermixed with strong black arsenical mundic, and mundic found as if it was melted into a metal showing gold; this is a sure indication for making rich bunches of gold. I send a specimen I saw broken from this stope yesterday, showing the rich yellow gold profusely mixed through the black mundic and quartz. The specimen weighs 9 ozs., which I estimate to contain 2 ozs. of gold. In the 50 No. 5 level has been driven a further distance north on the course of the lode, towards the Albion shoot of gold, 4 fms.; total distance driven from the winze, 35 fms. 4 ft. Near the present end a promising leader was intersected bearing north-west; after proving it for 3 fms. it it became small, and the country changing hard. This end has been driven through a very hard bar of ground during the past month, making the progress slow. There is a better change making its appearance, and I hope we are through the bar. The hanging-wall is very regular, and the lode is small on account of being squeezed with the hard ground.—Crushing: In consequence of the driving pinion-wheel of the stamps breaking three weeks ago very little quartz has been crushed this month. Being so far distant from a foundry I could not get a new wheel delivered here sooner than this week, the ironfounders promising to have it here to-day, that I may resume crushing on Monday, the 4th. The quantity of specimens raised during the past month is 20 lbs., making 55 lbs. on hand; which, with the general stuff to crush, will yield 120 ozs. of gold to this date. The machinery underground and at surface continues to work with satisfaction. Every point of our operations are pushed ahead as fast as possible.

NEW BENSBERG.—C. Craze, July 16: Victoria Shaft: I am pleased to say that the lode in this shaft is improving for both lead and blende; in the eastern end especially we have a fine looking lode, which appears to be dipping west, and as far as we can now see we have every reason to expect a valuable lode here at no early date. But in the past week our old bucket rod broke twice, which threw the water in, and impeded our progress in sinking, and I think it would be advantageous to have a new set of rods immediately. There is no change in the lode at the 22, west of this shaft, since my last; we are still driving north through the lode, which contains lead and blende throughout. The lode in the 22, east of shaft, has improved again, now worth 1¼ ton of blende to the fathom, with some lead ore intermixed, and looks very promising. The 14 east is producing good stones of lead. We have not met with anything of value yet in our trial shaft to the east of opencast, and we have now commenced driving south of same.

LUSITANIAN.—July 10: Palhal: Taylor's engine-shaft is now being sunk below the 200, and the lode is producing 5 tons of copper ore per fathom for the length of the shaft—15 ft. In the 50 cross-cut, north of Perez shaft, we have met with nothing since the date of our last report. The lode in winze No. 108, below the 150, west of Taylor's shaft and west of the slide, is worth ½ ton of ore per fm. In winze No. 106, below the 28, east of River shaft, the lode is worth ½ ton per fathom. The men here will be employed in stoping for a part of the month. In winze No. 107, below the 180, west of the slide, the lode is worth ¾ ton of ore per fathom.—Levels on Basto's Lode: The lode in the 200, west of Taylor's, has become small and unproductive. In the eastern end of this level the lode is yielding 2¼ tons of ore per fathom. The lode in the 190 west is yielding ½ ton per fathom. We have not found anything yet in the 180, driving west of Taylor's, to satisfy us as to the lode. In the 160 north of Basto's lode, west of Taylor's, nothing of value has yet been met with. The lode in the 150, west of slide, is 3 in. wide, composed of quartz. The lode in the 90, east of River shaft, is poor in the present end. The men will be stoping a part of the month. The lode is 2¼ ft. wide in the 70, east of River shaft, and composed of flookan and country, with spots of lead. In the level above—the 50—the lode is worth ¼ ton per fathom. At Carvalhal, in the 60 west of the cross-cut, south of the incline shaft, there is no change in the lode to notice. In the 30, north of the great lode, west of the shaft, the lode contains good stones of blende.

For remainder of Foreign Mines, see to-day's Journal.

A NEW PATENT METHOD OF FITTING UP WHEELS AND AXLES.

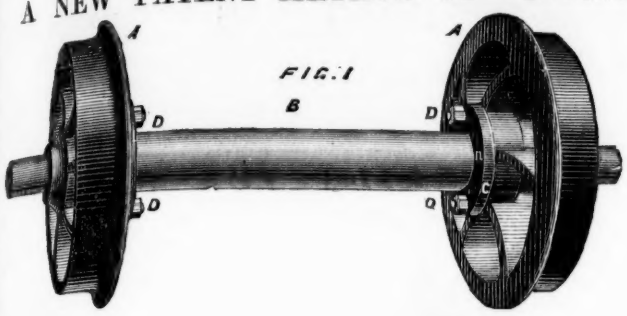


FIG. 1

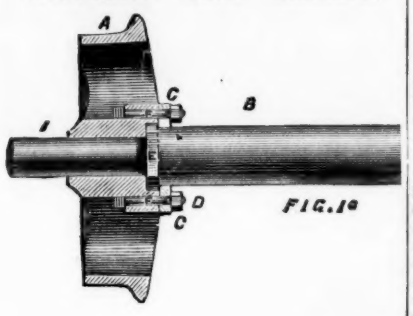


FIG. 1a

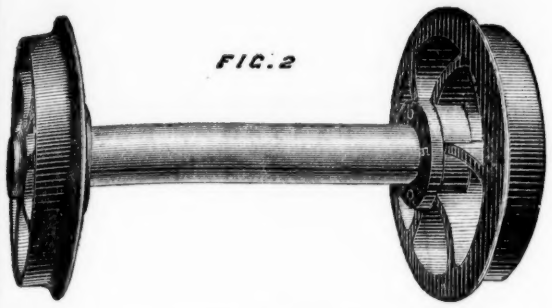


FIG. 2

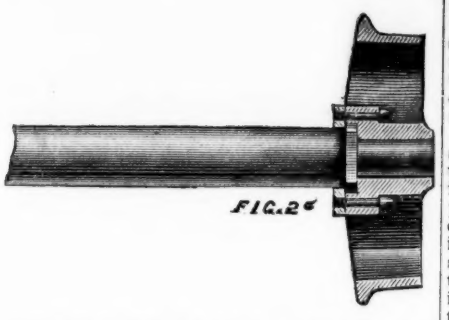


FIG. 2a

A NEW PATENT METHOD OF FITTING UP WHEELS AND AXLES.

In a former number of the Journal we gave a short description of the invention of Messrs. J. FENTON and SONS, Sykes Works, Sheffield, for attaching wheels to axles. The invention will be received with more than ordinary interest at the present time, owing to the discussion on the size of wheels best suited for certain purposes, the quality of wheel material, and the "stuffing" or strengthening, which is sometimes done with paper. There are, further, a multitude of circumstances which require the introduction of some safe method of wheel motion, and the number of accidents on the line in ordinary traffic and in ironworks and collieries will prove this.

It would be needless to attempt to furnish a list of the peculiar strains to which wheels bearing heavy burdens are subject. One very prolific cause of breakdown is the habit of spragging the wheels of colliery corves or tubs, the wrench caused by the momentum of the vehicle, and the sudden stoppage of the rolling wheel, shakily fastened to a fixed axle, at once tries what stuff the whole is made of. Only a few experiments of this kind are sufficient to make it apparent that there is a limit even to the endurance of a stoutly-built coal wagon. But that rough usage is the lot of such aids to labour and commerce seems to be a conclusion before ordained. It would be useless to attempt to insist on working men above and below ground being particularly gingerly and careful as to the way in which they approached any part of a wagon or corve they are in the habit of pitching coal into or out of every hour of the day. The great aim is to save time, and to get the conveyance mentioned to do its part of the work as quickly and as well as possible. It, therefore, becomes apparent on a very simple hypothesis that wagons and corves are worse than useless unless they are stoutly built and especially designed to bear all the strains, the wear and tear, which may be reasonably placed upon them.

Messrs. Joseph Fenton and Sons have at once gone to the most vulnerable part of the subject they have taken in hand. "A thing is not stronger than its weakest part," and, undoubtedly, the tenderest portion of a wagon or corve is to be found between the wheel and the axle—the active portion as distinct from the body of a wagon which is quiescent. We illustrate this week the latest patent for so combining the wheel with the axle as to make the whole one solid mass calculated to resist a maximum amount of wrenching and ordinary wearing force.

Fig. 1 shows a longitudinal view and plan of a pair of colliery corve wheels and axle, fitted up for outside bearings. A A are the wheels, B is the axle, C C the washers, D D the bolts, E the collar on axle B, and F the recessed boss in the wheel. Perhaps our readers will require a little further explanation of this most simple method of securing with a minimum of elaboration a maximum of concentrated strength. We should premise that the wheels, axle, and all parts are made of steel—the firm enjoying a high reputation for their castings from crucible steel. The wheel is cast in the whole, with a recessed boss on the inside, made to any shape, corresponding with the shape and depth, with a collar formed on the axle. The recess, of course, may be square, octagon, or other shape, but the hole through the wheel is by preference made round. The axle is also made of steel, so as to continue the resistance found in the superior metal of the wheel, and to become a fit partner to it. When the wheel is placed on the axle and the collar properly fitted to the recess a washer or plate, made solid or in parts, is fitted over the axle, on the contrary side to that on which the wheel is fitted, and secured by screws or nuts and bolts.

Fig. 1a shows the internal fixings of the axle in the boss of the wheel. The "catch" is plainly visible, and it can also be seen what an additional advantage is to be gained from the washer. From a smaller diagram the care shown in the construction of these washers is visible in the dovetailing arrangement of the segments, the greatest resistance being given at the point of the greatest strain.

Figs. 2 and 2a show the same principle applied to inside bearings, thus showing how a much neater wheel can be turned out on the same principle. If anything, some builders would feel more satisfied with the fact that their washers were secured by screws instead of bolts and nuts. As a matter of fact, neither can work loose from the whole body—axle and wheel—but in the application of the system as shown in Figs. 2 and 2a much more symmetry is attained.

Messrs. Fenton's patent is applicable to the wheels of most vehicles, also to pulleys, fly-wheels, and so on; and we are not surprised to learn that their recent patent has been exceedingly well received. One great point to be considered in regard to this or any other invention is its simplicity and the ease with which it may be carried out by comparatively inexperienced workmen. It would be manifestly unfair to judge of the merits of any speciality by the results of a set trial, carried out by men who had nursed the invention from its infancy.

What is desired above all things with regard to new notions intended for general use is a certain latitude for accidents, ignorance, and clumsiness. This is best represented by extreme simplicity, without which, we make bold to affirm, no invention however valuable can ever be expected to fare well in ordinary hands. Another chief point also demands the attention of the employer of workmen when he is considering the claims of a recent patent. We refer to the question of skilled labour. There are many elaborate systems strictly carrying out one or other law of higher mechanics, which are left in the shade, neglected, and eventually forgotten, just because of the difficulty in ensuring that amount of skilled and careful attention which is required. The necessity of dispensing with skilled labour is becoming more apparent every day. Inventors have realised the idea, and consider it one of the chief auguries of success, for competent judges declare that simplicity is the ruling feature of their discovery. It will be noticed that we have not referred to the question of expense, as it appears in connection with skilled and unskilled labour. This is a most important consideration, but our limited space precludes our entering into it at great length in this article; suffice it to say, that Messrs. Fenton have considered this, as well as the former point we touched upon. There is no great amount of "showing" required to learn how to put these wheels and axles together or to take them apart in case accident has injured any portion. We should imagine any collier could take a wheel off his corve and replace it with very little trouble. An axle may require attention, but, as we before pointed out, this could be taken away to the smith's shop, while another axle could keep the wheels at work without loss of time. All the parts being well fitted and working together are accessible at any time, may be separated should occasion require, and thus it only becomes necessary to lay in a stock of the different portions, axles, washers, screws, bolts, and wheels, to be able to repair at any time, and to keep the maximum quantity of rolling stock at work.

We are pleased to notice that, in preparation for the great demand which has set in, Messrs. J. Fenton and Sons are laying down new plant to turn out many wheels and axles, the cost to the purchaser being but a slight advance on the old uncertain descriptions.

MANUFACTURE OF SLAG WOOL.

Heretofore in the manufacture of this material the hot slag as it leaves the furnace has been subjected to the action of a jet of steam or air for the purpose of dividing it into extremely fine filaments, but the direct action of the steam has not been altogether successful in the production of a material free from impurities known generally in such manufacture as shot. Mr. CHAS. WOOD, of Middlesborough-on-Tees, has, therefore, devised means whereby he believes a large proportion can be made entirely free from shot, thus leaving the fibres or filaments almost pure. He conducts the slag from the furnace by the usual slag runner and at the discharge end, and on one side underneath the usual slag runner he places an air or steam jet, preferably the latter; on the other side of the runner, and opposite the steam or air jet, he provides a large tube of wrought or cast-iron leading to a chamber or receiver, to be hereafter described. The mouth of the tube—that portion of it near the runner—is open on the lowest side, so that the shot coming from the slag as the wool is divided from the same, or in other words, as it is manufactured, is free to fall to the ground or into any suitable receptacle, while the slag proper goes into an ordinary slag box, or is otherwise disposed of as desired. Into the tube and beyond that part thereof which is not open he leads a second jet for the passage of air or steam, and the object of this second pipe is that the air or steam which is forced through the same towards the chamber draws the wool or silicate cotton which has been produced by the first steam or air jet into the tube, and sends it on into the chamber; this chamber is constructed or formed of a series of frames made of wire netting for the purpose of catching the wool blown into the same, and allowing at the same time the steam or air to escape.

With regard to the arrangement of the wire netting, he finds it most convenient to have them in a V or corrugated form, and to connect to the apexes of (say) the V's what he terms draught plates, which tend to check the current of air or steam, and to allow the fine qualities of the wool to settle behind them in the angles formed by the V-shaped netting. Near the entrance of the chamber, and opposite the tube, he places a board or plate for the purpose of arresting any shot that may possibly be carried into the chamber through the tube, and thus stop the shot from contaminating the wool. A galvanised iron or other roof may be provided for the cage or chamber, but this may also be of wire netting or any other material. The invention then essentially consists in the employment in the manufacture of two air or steam jets, one to make the wool, and the other to draw it into and send it through a tube into a chamber or cage made of wire netting or perforated plates, or equivalent material, in such manner that the wool is caught by the sides, while the air or steam is able freely to escape without forming currents, and also a great side area of netting or perforations upon a comparatively small space of ground. The simple but effective means provided for arresting the shot, and dividing it from the wool, is also a very important feature in the invention.

TREATING ORES OF NICKEL.—The treatment of the ores of nickel found in New Caledonia and elsewhere, consisting essentially of silicates of nickel, magnesia, zinc, and iron, has been receiving the attention of Mr. G. H. COSSINS, of Melbourne, Victoria. The object of the invention is to break up the combination of the silica with the nickel by providing for the silica a stronger base than the nickel, to present to the nascent nickel some body capable of forming an alloy or compound from which the nickel can be afterwards easily separated, and to avoid as much as possible the reduction of metallic iron, and its consequent alloying with the nickel. To effect these objects the ore is mixed with (say) 25 per cent. of soda salt (sulphate of soda being preferred), 30 per cent. of limestone, 12 per cent. of charcoal (or, in place of charcoal, 15 per cent. of coal), and 20 per cent. of either oxide or sulphide of antimony. This mixture is fused on the hearth of a reverberatory furnace. When the fusion is complete the charge is skimmed and another charge added, and other charges in succession, until a sufficient bath of the alloy is collected. The furnace is tapped in the usual way. The alloy thus obtained contains nearly the whole of the nickel originally contained in the ore combined with antimony. In order to separate the nickel and antimony the alloy is melted in a crucible, or on the hearth of a reverberatory furnace, with oxide of antimony. By this treatment the nickel is completely oxidised out as a scoria, together with some antimony oxide. The scoria so obtained is fused with sulphate of soda and charcoal. By this treatment the antimony is obtained as "Kermes" mineral of oxysulphide of antimony, and the nickel is pure sulphide of nickel. This sulphide can be treated by well-known processes for obtaining metallic nickel, or alloy of nickel. By this method of treating the ore the iron is only reduced in small quantity, and only traces of it are found in the nickel.

PURIFICATION OF LEAD.

An improved method of treating lead containing either gold or silver or other foreign metals, so as to remove such impurities, has been invented by Mr. C. ROSWAG, M.E., of Paris, and Capt. H. GEARY, of Old Charlton. They operate upon molten pig-lead containing one or both of the precious metals, and either with or without the presence of antimony, arsenic, iron, or zinc, copper, or alloys of the same. The lead to be treated is melted down in an ordinary cast-iron crystallising pan, and they then introduce compressed atmospheric air, either at the ordinary or at an elevated temperature, by means of a tube or pipe, or tubes or pipes, either of iron, fire-clay, or other suitable material, and, by preference, of about 2 in. in diameter; this tube or these tubes are placed nearly at the bottom of the pan—say, about from 4 to 5 in. from the bottom. The tube or pipe or tubes or pipes are supported vertically by preference, are introduced into the centre of the pan, which tube or pipe or tubes or pipes is in communication with a compressed air reservoir or other contrivance. The atmospheric air is compressed to the desired extent—say, to about from three to four atmospheres, is then admitted into the molten lead; at the commencement of the operation the injection is by preference slow, and subsequently the admission is in larger quantity. Nearly the whole of the impurities contained in the lead are thus oxidised and obtained in the form of a scum or dross.

The introduction of air is arrested when a sample of the lead assumes a bluish-violet hue on cooling and ceases to be brittle. After this first operation has been performed the auriferous or argentiferous lead may then be subjected to the ordinary zinc desilverising process, and the rich dross obtained be submitted to a process of eliquation with the object of removing the excess of lead contained in the dross. Having thus effected in this second operation the separation of the precious metals by means of zinc from the lead, the molten lead is again submitted to the action of atmospheric air in the manner before mentioned, and the resulting scum which contains the last traces of zinc removed. This third operation is continued until the lead assumes a bluish-voilet appearance on cooling, thus indicating that a soft lead has been obtained. The purified lead thus obtained may be cast into pigs or otherwise employed.

The oxides or scums resulting from the first and from the third operation by atmospheric air may be treated by a process known as Roswag's or other process. The rich dross, alloy of silver, zinc, and lead resulting from the second operation by addition of zinc containing nearly the whole of the precious metals is submitted to the action of hydrochloric acid in order to dissolve the compounds of zinc, which when dissolved will be in the state of chloride of zinc, which chloride may be treated by Roswag's or other process in order to obtain zinc or compound of zinc therefrom. Should any lead be dissolved with the zinc it may be precipitated in a metallic state by means of spelter, and may be added to the residual lead containing gold and silver. The residue containing the precious metals and a certain portion of the lead being thus freed from zinc is washed, and is then melted down in a reverberatory or other furnace. This they call the fourth operation. When a sufficient quantity of the rich lead thus resulting is obtained it is to be melted down, by preference in a cast-iron pan, and submitted to the action of compressed atmospheric air with the object of effecting the oxidation of the whole or of the greater portion of the lead, the litharge thus produced being removed; should any residual argentiferous lead remain it is to be submitted to a similar subsequent and fifth operation. The litharge thus obtained, containing practically the whole of the precious metal or metals, is then treated with acetic or pyroligneous acid. Any silver contained in or mixed with the litharge will remain at the bottom of the vessel together with some metallic lead, should any remain unoxidised. This is the sixth and principal operation. After washing the silver residue it may be melted down and refined. The solution of acetate of lead resulting may be crystallised or otherwise employed.

COMPRESSING OR CONDENSING INGOTS.

It is well known that by reason of the process of conversion used in the "Bessemer float" the resulting metal is badly honeycombed and extremely heterogeneous, consequently it requires considerable re-working to render it solid and homogeneous. This irregularity of the ingot makes it difficult, almost impossible, to produce a constant and invariable quality of finished material, no matter with how great precision and chemical accuracy the conversion is accomplished, because no two ingots will be honeycombed in the same manner or degree, and as there can be no positive determination of the interior, so there can be no accurate standard of comparison between one ingot and another as to the amount of rolling or hammering necessary to bring them to the same degree of fineness and homogeneity. This defect is one which steel producers have long contended against, but with how much success the state of the art shows; Mr. David McCandless, of Pittsburg, Pennsylvania, proposes then a process by means of which the ingots will be cast solid throughout, so that when rolled or hammered to the same degree all the products shall be of a definite, uniform, and determinate quality, which can be constantly maintained; thus making the product in every respect more reliable and marketable, enhancing its value to the consumer, and enriching the producer.

The improved arrangement consists in admitting a direct steam pressure upon the surface of the molten metal in the flask, and in allowing the steam to superheat after all the vents have been closed. The flask is of the usual form, having the vertical sprue leading the metal down to the ingot and into the bottom of the flask, whence it fills the flask by the law of equilibrium. The mere shape of the flask, or style of ingate or sprue, is not of the essence of the invention, as he has merely adopted this form as being in general use, and suitable to the purpose. The flask is topped by a strong cover tightly clamped down, and which has a vent hole for the escape of air and gases from the flowing metal. This vent has a removable plug fitted to it. Coming from the boiler or other source is a steam pipe, which passes through the cover and delivers inside the flask at or about the top. The pipe which delivers the steam is fitted with a stop-cock, which may be at any point, but preferably near the flask. It may also be desirable to have a flexion joint on the pipe to facilitate the removal of parts when necessary. On the shaft of the sprue are two pivot lugs, which constitute a bearing for the bail or arch; the latter is provided with an adjusting screw, which bears down upon the cover of the sprue and binds it tightly in place.

Everything being in readiness for pouring, the sprue uncovered, the vent open, and the cock shut, the ladle is swung over the sprue, and the metal allowed to flow in till the flask is almost full, then the usual sand or loam is shovelled into the top of the sprue, its cover applied, and the screw tightened down. After this the plug is driven into the vent, then the cock is opened to give access of steam, and when the steam has filled the space at the top of the molten metal the said cock is again closed; this occupies but an instant's time. There is, to begin with, an initial pressure downwards upon the still fluid ingot equal to the pressure in the boiler. Ordinarily this is about 75 lbs. to the square inch, which would give upon an ingot 12 in. square at the top nearly 11,000 lbs. pressure, but the vividly intense heat of such a molten mass of incandescent metal will instantaneously effect the superheating of the steam above it, and with lightning speed sends the pressure up to an enormous degree.

The result is that the ingot is compressed into a perfectly solid and homogeneous mass of metal, which when cut in sections exhibits a smooth and even structure throughout. Such being the case, it necessarily follows that such an ingot requires little or no re-working beyond the usual reduction to form and gauge. Hence, since all the ingots produced by this process are of the same degree of perfect solidity and homogeneity, all products of similar dimensions will have almost exactly the same tensile strength, a result it is believed never before accomplished in the history of the art.

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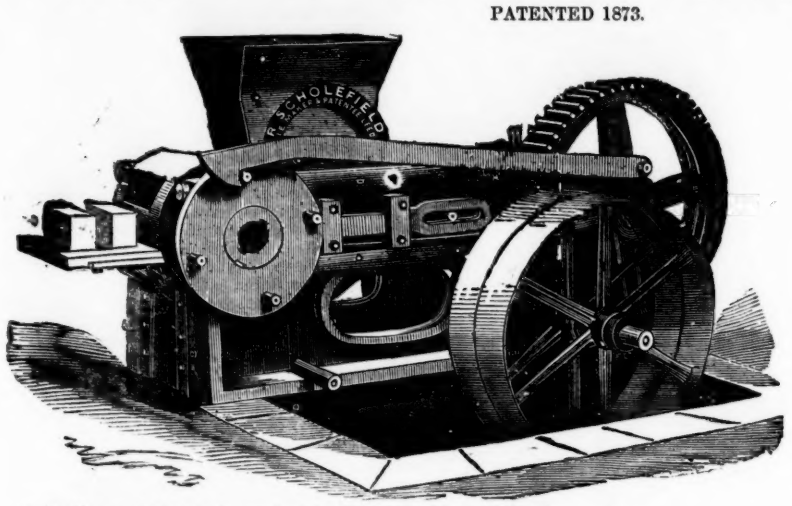
LATEST PATENT BRICK-MAKING MACHINE.

PATENTED 1873.



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2 men digging, each 4s. per day	£0 8 0
1 man grinding, 4s. 6d. per day	0 4 6
1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day	0 2 0
1 boy greasing, 1s. 6d. per day	0 1 6
1 engine-man, 5s. per day	0 5 0
1 man wheeling bricks from machine to kiln, 4s. per day	0 4 0
Total cost of making 10,000 pressed bricks	£1 5 0, or 2s. 6d. per 1000.

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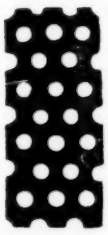

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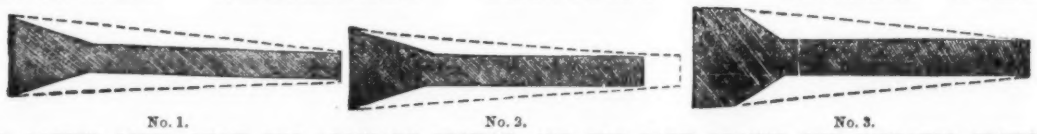

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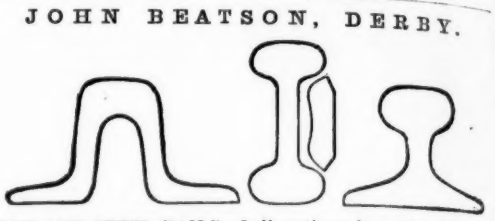

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